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ORIGINAL ARTICLES

A CHAPTER ON THE PIONEER PERIOD OF MEDICINE IN ILLINOIS *

O. B. WILL, M.D.
PEORIA, ILL.

On receiving from this Society the honor of an invitation to be its guest this evening and participate in its work to the extent of presenting some topic associated with the medico-historic interests of this state, it immediately occurred to your speaker that a perfectly appropriate theme would be the experiences, in a developmental rather than personal sense, of the first group of medical representatives to take up their abode in the central Illinois valley. Associated with that thought was the eminently pertinent reflection that the city and immediate locality from which the writer comes would necessarily occupy a conspicuous position, at least chronologically, at the head of any inclusive narrative of medical events in the northern half of the commonwealth, and hence be entitled to recognition as the veritable cradle of professional effort in that vast territory.

While to many unacquainted with the actual facts of the situation this assertion may sound strange, the records testify to the truth of the statement. How a point 100 miles west of Chicago became the most important settlement, and for at least fifteen years remained the business and professional emporium of a section of country so apparently accessible as northern Illinois to the eastern sources of immigration, at first seems inexplicable, but is, after all, easily explained when one understands the course or routes of immigration, as well as its sources. In the circumstances and conditions of transportation lay the secret. The features controlling such advancement were responsible for the early prominence of Peoria and the central valley region in professional as well as other directions, and enabled it to be the first municipality in the state to indulge in the luxury of collective professional effort to advance mutual material interests, as well as those of the science and art of

* Read at the meeting of the Society of Medical History of Chicago, Feb. 24, 1911.

medicine, by organizing a live, working medical society which has remained in uninterrupted existence down to the present time.

In order to aid the understanding in acquiring a proper perspective of these events, it may be said that when your Daniel Brainard was but a lad of 10 years, at least two members of the profession he loved and adorned were already located at Fort Clark, and when Chicago was first incorporated as a village half a dozen or more doctors were vying with each other for popular favor at Peoria. Anything, therefore, pertaining to that early struggle for professional development and advancement, even though of intensely local coloring, ought to be of interest to, as it is the common heritage of, the profession of northern Illinois who have taken up successively the burden of duties and accrued problems of those who have in the process of time fallen from the ranks.

The experiences of these new-comers were more trying than customary to the vicissitudes of border-life, because of the exceptional conditions of immigration referred to. These latter were peculiarly such as to bring together an unusually heterogeneous type and quality of humanity, professional as well as general. For, during the period of which this description is a partial reflex, from 1818 to 1848, Illinois was *the* frontier state of the nation's great northwest, and Peoria its frontier settlement. The latter was made such from the fact that the most feasible transportation highways were the rivers, and while the extreme southern end of the state was occupied by straggling settlers, mostly from across the Ohio in Kentucky, the interior was invaded over two routes having practically no connection with the settlements below. The first settlers at what was then called Fort Clark, which was built after the massacre at Fort Dearborn in 1812, came up the Illinois River from points on the Mississippi, such as St. Louis and further down. But the later contingents sought a shorter route from the east and middle south down the Ohio River to the mouth of the Wabash, thence up the latter stream to old Vincennes, and even as far as Fort Russel, where Terre Haute, Ind., now is located, and from there overland to Fort Clark, where the Illinois River could be conveniently crossed, and where needed supplies could be secured. There were no intervening stopping places, because the long stretch of sun-burned prairie offered no inducement to those adventurers, even if it is now worth $200 per acre. It was considered by these travelers practically a desert, and only here and there in some nook by an occasional creek could any man be induced to halt and arrange to call it home. But when the Illinois valley was reached, and its beauties spread to the wanderers' gaze from the tops of the bordering bluffs the temptation for further pilgrimage vanished, and Peoria began to be made the center of a thriving community. This at first attenuated but gradually enlarging stream of immigrants from the southeast met that from St. Louis and directly southern points. It was these two vital currents which brought into Peoria its peculiar conglomeration of humanity. The one from the east gathered up a variety of medical men, one from here and another from there, no two from the same locality or with the same antecedents, ideals, traditions or training. Men of refinement and education, of ortho-

dox principles, and those of irregular and sectarian predisposition and mould. Men imbued with the professional, social and political instincts of the slave states and the south, with those of northern sentiments and sympathies; all gathered into the vortex of the small human whirlpool at Peoria, presenting an admixture of materials and forces from which it is not difficult to surmise something might happen. And it did. The first happening came when the impact of these two currents approximately deflected on itself, that from the southeast, turning it back up toward the source of the Illinois River, and finally to the lower end of Lake Michigan where, meeting the tide already setting in from the east over the more northern route, a perfect maelstrom of human activities was created at Chicago, in comparison with which the similar movement at Peoria was but a tiny eddy. Nevertheless, the latter was for many years the proud possessor of eminence and, professionally speaking, worked over her varied medical acquisitions in a way to her everlasting credit. Consequently, another of the things that happened was the regeneration, or evolution, of these turbulent elements into a class of medical practitioners of which any municipality might be proud; the adoption of tactics from the results of which many a useful lesson might be drawn; and which was followed by a sort of centrifugal movement which scattered throughout the immediate territory a type of doctor that for more than two generations controlled the professional situation, and has not yet by any means lost its influence on either the professional or the public conception of what a physician should be.

With such a background of information it is the writer's purpose, from the memory of many years' personal acquaintance with most of the original actors in the professional drama of pioneer days, to present something of a picture of the ups and downs, and expedients, and achievements which marked the origin and likewise the progress of medical events in the central Illinois valley, especially the Fort Clark region, for a period of nearly three decades.

While small settlements, as before stated, had been made in the extreme southern end of the state and along the line of immigration near the mouth of the Wabash, with here and there a representative of the medical profession, the very first regularly ordained physician to locate for the practice of medicine in any portion of the territory from Springfield east to Indiana, west to the Mississippi, and north as far as one cares to think, was Augustus Langworthy, who settled in Peoria about 1822. That the doctor had poor picking pecuniarily, even as late as 1825, may be deduced from the fact that in all the country described there were but 1,236 settlers, including women and children. Doctor Langworthy, although one authority says he was not popular, seems to have been a very worthy man, well educated, of good ability, and that he was tenacious of purpose is abundantly evidenced by his continuing in practice in Peoria for some thirty years, subsequently retiring to a farm in Bureau County where he died in 1868.

Doctor Langworthy's only possible rival for the distinction of priority of residence was Alexander Wolcott, physician of the post at Fort Dearborn, but who in 1823 identified himself with the civic affairs of Chicago by marrying a Miss Kinsey, daughter of the reputed first resident of that city. That Doctor Wolcott even then exemplified, if he did not actually evolve, the subsequently proverbial Chicago instinct to take everything in sight, was shown by his not only cornering the matrimonial market, making himself the first Chicago bridegroom, as well as surgeon of the military post, but in his being in 1827 commissioned justice of the peace for the Chicago precinct of Peoria County. As indicating the cordial relations at that time existing between the two places it may be here said, parenthetically, that the first marriage ceremony thus celebrated in Chicago was conducted by Squire Hamlin of Peoria, who carried the license with him and stopped at Chicago for the purpose while on a government mission to Green Bay, and on his return spoke very highly of the doctor as a scholarly, polished gentleman, a graduate of Yale, and an ornament to his profession.

But our own Dr. Langworthy was not so very slow, for he soon became commissioner of highways for the county, was at the head of several successive grand-juries, surgeon of volunteers rendezvoused at Peoria during the Black Hawk War, and established the first fee-bill probably on record in the state by securing payment of one dollar each for five successive visits to a prisoner in the old log jail, and collecting by law from another delinquent patron an account of twelve dollars at the same rate, thus also establishing the useful precedent of county responsibility for medical services rendered to paupers.

But the real history of medicine in that section of Illinois began with the arrival in the early thirties and somewhat later of a group of talented, academically educated and professionally well-trained young men who came in on the then rapidly increasing tide from the east and southeast. The first of this interesting coterie to arrive at Fort Clark was Rudolphus Rouse, in 1831. He was the presiding officer at the preliminary meeting for the formation of the Illinois State Medical Society, and was its third president. He was likewise one of the organizers of the Peoria City Medical Society, and at one time a lecturer in the New York Medical College, New York City, from whence he came. The next member of this original group to arrive within the year was Joseph C. Frye, from the University of Virginia, and Ohio Medical College, the valley's representative at the organization of the A. M. A. in 1847, and the most renowned therapeutist in central Illinois. Then in rapid succession came Francis A. McNeill, who was distinguished in the fact that he cared for both soul and body; in other words, he was a Methodist minister as well as a practicing physician, preaching on Sunday and practicing medicine during the other days of the week. He was one of the original members of the local society, and assisted at the formation of the state body. Peter Bartlett, formerly secretary of the New Hampshire State Medical Society. John Arnold, a man who, although of delicate constitution and poor health, was not only a physician of high standing, but a politician of note, a personal

friend and confidant of Abraham Lincoln, who appointed him United States consul at St. Petersburg, Russia, during the trying period of the Civil War. John Murphy, a scholarly man, graduate of Edinburgh University, and whose penmanship, as secretary, is emblazoned on the first pages of the local society's minutes in 1848. Elias S. Cooper, who was said to have been the first man to use chloroform as an anesthetic west of Pennsylvania, who was Dr. Joseph Freer's competitor as candidate for appointment as demonstrator of anatomy in Rush Medical College; who went to Paris, at that early day, to pursue the study of surgery; who built the first hospital in Peoria; was a member of the local and state societies, and later removed to San Francisco where he became the most renowned surgeon on the Pacific slope, and in honor of whom was named the present Medical Department of the University of the Pacific: Cooper Medical College. J. L. Hamilton, who did the first successful laparotomies ever attempted in his home city, at a time when that meant abundantly more than it does now. J. T. Stewart, a noted botanist and surgeon of the Civil War. E. M. Colburn, a man of splendid education and culture, president for many years of the Peoria Scientific Society, and a valued and influential member of the American Association for the Advancement of Science. John Niglas and Robert Roskoten, involved in the revolutionary movement in their native land, who escaped from prison through the aid of compatriots, fled to Spain and from thence to the United States and Illinois, whence they won their citizenship by doing valiant service in the Union cause during the Civil War, the latter as a brigade surgeon.

Aside from these members of the profession especially distinguished outside as well as inside their technical field, were a number of others, active and progressive, whose names are on the early roll as colaborers in the field of Illinois valley medicine. Among these Robert Boal, long designated the "grand old man" of the Illinois profession, one of the organizers of our state society, of which he was later made president; formerly demonstrator of anatomy in the Ohio Medical College, four times elected to membership in the state legislature, friend and political adviser of President Lincoln, and lacking only eighteen months of rounding out a century of life. The following tribute to his colleagues, rendered at the semicentennial of the organization of the Peoria City Medical Society, when he was in his ninety-second year, is worthy of reproduction:

> Outside the City of Peoria, the pioneer doctors who were in this part of the State in the forties were Dr. Perkins of Tremont, Drs. Wilson and Wood, Sr., of Washington, Dr. Harris of Groveland, all of Tazewell county, Drs. Whitmire and Zeller of Woodford county, Drs. Thompson, Thomas, John and Charles Baker of Marshall county. Of these only four are now (1898) living, Dr. Charles Baker of Henry, Drs. Thompson and Thomas of Lacon, and myself; and strange to say, all are residents of Marshall county. In this city, Drs. Rouse, Dickinson, Frye, Andrew, Arnold, McNeill, Cooper and Murphy, with one exception have all gone, Dr. Murphy being the sole survivor. In the little dingy office of Dr. Frye, with its hard pine floor, its three or four stuffed wooden chairs, the men I have named met and organized the society whose semi-centennial we commemorate to-night. Dr. Dickinson, who presided, was a man of great nobility of character, of commanding presence, a high sense of honor and purity of life, a popular and success-

ful physician. Dr. Rouse was (if I am correctly informed) the second doctor to come to Peoria. In some things he was peculiar and in others eccentric. He was at times curt and abrupt, generally genial and cordial, and with a keen sense of humor. During his last illness, which was chronic and lasted for many months, he designed a monument for himself and family. He watched with interest its construction and erection and rode out to Springdale cemetery every few days when the weather permitted to note its progress. He often expressed his fears that he would not live to see its completion, as he wished to see how it looked before he died.

Dr. Frye had an extensive and lucrative practice, he was an omnivorous reader of literary and medical books, possessed a remarkably retentive memory, and was an entertaining conversationalist. Like others, he had a hobby. It was the most implicit confidence in the curative power of medicine. Dr. Andrew was of imposing presence, muscular as a prize fighter, careless in business, seldom or never sending a bill to his patrons. If he needed money he would ask for it from the first patron he met, and he always got it. With Dr. McNeill I was only slightly acquainted. He was a minister of the Gospel as well as a doctor. My relations with Dr. Arnold were more of a political than professional character. He was a candidate for the State senate and I for the house. We traversed together the three counties comprising the district, so that I knew him better as a man than physician. He was appointed Consul to St. Petersburg, but served only a short time as the climate was too rigorous. A few years after his return he died of tuberculosis. I would be recreant to a friendship of forty years with Dr. John G. Zeller, of Spring Bay, did I not stop to pay a tribute to his memory. He lived in a hamlet that had scarcely risen to the dignity of a village. His ability and acquirements would have secured for him more congenial surroundings had he desired, but he did not. He was not only doctor in the community in which he lived, but their counsellor and friend. They loved him while living and mourned for him when dead.

For the third of a century I have known Dr. Murphy. Through all these years I have had intimate social and professional relations with him. Our friendship has run throughout all these years, like the current of peaceful rivers, unvexed by a wave of anger, undisturbed by a ripple of ill will. For his sorrow and bereavements I have sincere sympathy. * * * Do you wonder that for this old time friend, polished gentleman, fine scholar, accomplished physician and sole survivor of the founders of this society, borne down with weight of years and sorrow, that I feel the most profound sympathy? For those pioneers who have "crossed the river" and have solved the mysterious and perplexing problem of human destiny I have tender memories.

This list is fitted to best illustrate the great variety of talent and force of character of those who constituted the chief representatives of orthodox pioneer medicine in the central Illinois valley, as distinguished from the unorthodox or sectarian mass of individuals whom the writer prefers grouping together as a whole, since with few exceptions they were men of no distinction other than that entailed in the adoption of some irregular creed. Nevertheless, as a body they did much toward securing recognition for many of their ideas and methods in the practice of the time.

With this contingent (a galaxy of talent to be proud of) began that revolutionary and evolutionary movement outlined in a preceding paragraph. Each member, conscious of his own dignity and ability, firmly fixed in his opinions, some representing the brilliant but fiery sons of the south, others the calmer but none the less stubborn product of the North, and yet others tainted with the rebellious spirit of Europe's oppressed, mixed with irregular characters indigenous to the then middle west; independent, self-reliant and aggressive, it may not be wondered there

was strife and contention and discord, even if nothing worse. Such a state of professional feeling, which to-day may seem absurdly unworthy and childish, was not at all uncommon for that period. At a much later one, in truth, the writer himself can well remember many personal encounters. Such forms of disagreement were the result of hot-headed criticism, jealousy and misunderstanding, mostly the latter, since fraternization was not a special characteristic of the days when medical men were nominally as well as actually "competitors," and as such had their own problems to solve; problems presenting somewhat different aspects from those of the profession of to-day. The period was one fraught with illogical, disconnected assumption in the science of medicine, and the art had not yet shed its swaddling-clothes of uncertainty and superstition. Blind science and empirical art; a mismated couple, hand in hand! And so the ultra orthodox, and the equally ultra heterodox games went merrily on. Even a quarter of a century later than the maximum limit of the period under consideration the writer himself was taught to rely mostly on hereditary and grotesque formulas, if he could not adopt some one of the several "systems" in vogue, and when finally formally born into the profession was clothed in a therapeutic garment of many colors; baptized, so to speak, in laudable pus, and sent blind-folded, as it were, in search of aids to the *vis medicatrix Naturæ*.

But these "competitor" professional forefathers of ours had other problems to solve aside from those directly associated with the technicalities of their calling. Competition was keen. At this distance from the scene of action we are often disposed to think that philanthropy was the dominating virtue of our medical ancestors. But while those of self-sacrificing zeal were plentiful, and show well in song and story, they were fully alive to the material needs of life, and the struggle for existence was even more keenly felt than it is now. Fifty years ago the writer asked one of these old men in a small village what he considered as "success" in the practice of medicine. His reply was "a living for myself and family, something with which to educate the children, and $500 a year for the proverbial 'rainy day.'" The same query was made of a city doctor, and he promptly answered "ten thousand a year." It was a disillusion that came with so direct a measurement of professional "success" in dollars and cents, but the spirit is with us yet despite poets and romancers. Likewise the same need existed then as exists now for some means of making oneself conspicuous in the public eye. And therein, as one of the original pioneer professional brethren used to tell the writer, the horde of irregulars, by whom the lack of legal supervision in the old days permitted the regularly educated physicians to be surrounded, had a great advantage. They always had something to talk about, and were continually expatiating on the merits of their particular "school" and its special doctrine. They were the veritable prototypes of the specialists of to-day, and on the whole perhaps no more dangerous.

While the orthodox physician of that time continued to grope in the darkness of uncertainty for some really scientific key to the mystery of a successful therapeutics, these independent, self-satisfied thinkers and

exponents of Nature came forward with numerous theories and hypotheses as practicable substitutes for the real thing. Whether it was the so-called eclectic, physio-medic or botanic, it mattered not. The essential feature seemed to be that symptoms are the infallible language of distressed Nature, and when accurately read and properly interpreted were a sure guide to not only the pathology of any case, but to such treatment as empirical demonstration had found capable of meeting the indications. While that was the central thought of what might properly be called the indigenous therapeutic philosophy of the time, there was considerable diversity of opinion among the followers of the main doctrine respecting the relative utility of reputed measures. In that fact lay the reason for the great variety of sects. Every clique of these sectarian followers had its therapeutic specialty, which in their hands and with their ingenuity had as much publicity-value as any specialty of the present day. The members of the regular profession, while at constant variance among themselves, were in the main loyal to their sense of personal dignity and the traditionary principles of ethics. Nevertheless, in a country and among a people in general having no respect for such refinements of sentiment, they were placed at a great disadvantage. Absolutely surrounded and pervaded by low professional influences, they found themselves burdened with a great task. To protect both themselves and the public from the inroads of a growing class of charlatans, the outgrowth of the prevailing professional libertinism, was a proposition of no mean order, especially where no governmental interference was exerted to control or supervise the educational qualifications of practitioners, or even took any cognizance of the public welfare. It was with respect to this state of things that the proposition was broached to make some effort at control. Appeal to the state under existing conditions was practically useless. Only some local educational influence or social restriction seemed to offer any prospect of relief. It could not suffice to say that the superior educational qualifications of these men were in and of themselves a sufficient protection, because as a matter of fact they were not, and never have been when pitted against designing fraud. At this particular time especially, one man's experience and opinion in diagnosis and treatment had about as much weight as another's. In fact the more intelligent portion of the sectarian breed had a distinct advantage in offering something nominally tangible in the way of diagnostic and therapeutic indications. Their theories and the methods based on them were alluring alike in their basic simplicity and ingenious logic, which no one was in a position to satisfactorily refute, even in the face of occasional discrepancy in results, because common alike to all "schools" of practice.

But superior intellect has, after all, a habit of gaining its point in one way or another. In this local strife for supremacy attrition of personal elements gradually was wearing away the rough corners of dispositions, and tolerance began to take the place of arrogant vanity. The policy of ignoring the sectarian professional parasites had proved a failure, while contempt and scorn had met like defeat, as they always will in such cases by serving to arouse the popular antipathy through claims of

persecution. An unusual degree of *rapprochement* had been steadily if slowly manifesting itself among even the most violent tempers, and a similar degree of strategic condescension manifested itself. Informal meetings were held to consider the situation, gradually increasing in attendance. At the suggestion, finally, of some wise heads it was concluded to adopt a pacific policy toward at least the chief and most influential exponents of these specific doctrines, and gradually, through that persuasive influence which is always generated and cultivated by honest and frank association, lure them to surrender something of the aggressively sectarian in their habits, and join the regular brethren in an effort for personal and professional aggrandizement. In other words, the old idea of exclusiveness in professional association on the part of the regular bred doctors was to be minimized and an era of cooperation among all fair-minded and respectable members of the profession attempted.

This proposition of conciliation between the warring professional representatives at that early day was naturally a long time in maturing, because of opposition to any fraternization with men of such varied professional hue as those with whom the regular faculty would thus be brought in contact. However, by dint of perseverance on the part of the far-sighted few who could see in the consummation of such a movement a partial solution, at least, of the difficulties under which the profession were laboring, and especially in view of a proposition to found a medical college, after the failure of the first attempt of Drs. Brainard, Blaney and their few associates in Chicago, consent of all was secured, and the scheme was quietly launched. It was hoped by its projectors to thereby secure some sort of controlling influence over public opinion, and by that means lessen the evils of unbridled license in the practice of medicine. Thus did that group of resourceful professional progenitors of ours anticipate by some sixty years the action taken by the profession within the last decade.

A series of conferences was planned, in which matters pertaining to the welfare of both the profession and the public were discussed with avidity, and to which were invited those honest adherents of irregular medicine who really believed what they preached and practiced, and yet were considerate enough of their own self-respect to indulge in no blatant pretensions. The result was in some respects decidedly unexpected. The idea seemed to take immensely. The conferences thus inaugurated became so popular that they spread throughout not only the home county, but adjacent counties, and even up to as late a date as forty years ago, the writer himself attended a number throughout the country, and never enjoyed himself more, or profited more, in his professional life. Not only were technical subjects discussed, with the vim and ardor and honesty which usually characterizes the proceedings of small assemblages, but the various sectarian doctrines and methods were likewise taken up and considered from every point of view. Any man of any particular faith within reach was given not only a generous, but hearty welcome and his expositions listened to with that interest and respectful consideration which is always exhibited by those who are seeking the truth, from what-

ever source it may be derived, and who consider every honest human experience, thought and ingenuity, a legitimate field for serious investigation, particularly at a time when, as then, every one was searching earnestly for some tangible clew to the unknown. But one peculiar effect of all this, and that which for so long a time made itself conspicuous in the medical affairs and professional attitude throughout that section of the state, was the evolution of what might be called a mongrel, but none the less efficient, type of medical practitioner; one that yet prevails to some extent, and whose representative when arguing the subject is ready to contend that the scientific and practical developments of the last quarter of a century are but in line with, and a demonstration of, the approximate accuracy of the very principles of guidance he had been following for the previous thirty or forty years. Because, be it remembered, those early days were the days of preceptors, when values were instilled, and handed down through successive generations of student practitioners.

In Peoria a surprising liberality of sentiment and practical harmony were gradually developed and maintained. Half a dozen or more of the most prominent practitioners of sectarian persuasion, especially homeopathists and eclectics, and others with similar leanings, were of the number who finally established a sort of aristocratic circle of defense and offense, and thereby accomplished an immense amount of good for themselves and the general public, by curbing, through personal and collective influence, the arrogance and pretence of the baser sort. It was to that act that Charles Ballance, a local historian about 1870, referred when he wrote: "The laws of Illinois do not prescribe who may and who shall not practice medicine. To remedy this evil, certain physicians of Peoria, on the fifteenth of April, 1848, formed themselves into a medical society, which has been kept up until this day."

As a matter of fact formal action was decided on when Dr. Joseph C. Frye, who was the central Illinois representative at the meeting in New York to organize the A. M. A., on his return gave such a glowing report. Thus in the following April, for the first time in Illinois history, a city medical society became an accomplished fact.

HYGIENE IN SCHOOLS *

Lloyd M. Bergen, M.D.
HIGHLAND PARK, ILL.

The idea of a joint convention composed of teachers, institute workers, physicians and others interested in public health improvement, appeals to me as I believe it does to all of us as a well directed effort toward unifying and harmonizing our attempts to better the physical conditions of mankind.

* Read before the joint meeting of the Lake County Medical Society, Lake County Teacher's Association and the Lake County Tuberculosis Institute, under the auspices of the Educational Committee of the Lake County Tuberculosis Institute at Deerfield Township High School, Highland Park, Ill., Jan. 21, 1911.

I can assure you of the teaching profession in particular, whom it is my privilege to address, that you may recognize in the presence here of representatives of our medical society, a genuine desire on the part of the physicians of our county to cooperate with you and assist you in every way in that portion of your work pertaining to the physical welfare of our county and city schools. On the other hand, we of the medical profession recognize in you, and I state this without reservation, our greatest of all assistants and cooperators in the advancement of public medical education and disease prevention.

If it be true as we believe that disease is in the main a direct result of human ignorance, then our hopes of disease prevention must depend on the acquisition of wisdom; and a failure on the part of any state or nation to encourage public education along the lines of sanitary and hygienic instruction must result not only in race deterioration but even in a decline of civilization itself.

Not only do the hopes and aspirations of mankind toward achieving broader and higher planes of life but the mere struggle for existence itself depends upon intelligent effort toward physical preservation. The strength of any nation, civic, economic and industrial, remains absolutely commensurate with and must depend on the individual health of its citizens. The world powers of to-day are realizing more than ever before that public health is a tremendous asset, of commercial and protective value; and our own national government is beginning to realize, all too slowly perhaps, its obligations toward its citizens in the protection and safeguarding of the lives and health of the people.

We have awakened to the fact that the vast majority of human disease, with the resulting disability and enormous loss in industrial value, is capable of prevention. We have come to know that with our present knowledge and with an intelligent enforcement of the health laws now enacted we could add fifteen years to the average human life; but we must also recall the fact that health laws do not enforce themselves and that competent sanitary legislation, no matter how wisely or comprehensively constructed, must remain utterly powerless and inadequate unless it be preceded by a broad and practical public education, broad enough and comprehensive enough not only to create an intelligent and universal demand for the enforcement of existing law in its letter value; but to appeal instinctively to those higher unwritten principles of human right and human justice which we as a free thinking, liberty-loving nation must recognize and respect.

Still further than this, I believe that in these later day efforts to interest and educate public sentiment in civic and social health problems, we hope for and may attain something more than mere physical benefit. In united effort of this character toward mutual betterment widely separated individual interests are united and there are unconsciously fostered those rarer elements of human love and sympathy for fellow man which must make for a truly higher type of civilization and a better world in which to live.

The statement that "all men are born free and equal" if applied to man's mental and physical life equipment, becomes a falsity. We in our work as physicians and you as teachers are brought constantly in contact with those whom Nature has placed here in our midst, launched in life with a terrific handicap; and it is particularly in the interests of those on whom the sins of generations of physical, mental and moral shortcomings are being visited that we are striving to-day to create conditions of fairness that shall place them more nearly on an equal footing with their more fortunate companions.

Experience has taught us that in order to correct mental or moral obliquity in an individual, man or child, we must correct first of all the physical. Hippocrates must have known something of this centuries ago when he taught that "where there is love of medicine there is love of mankind"; and this is one of the profoundest truths emanating from any wise man of any period. Kant and Descartes taught that not mere physical benefit but refinement and culture as well must come from the teachings of medicine in its broader sense.

It is needless even before an audience composed chiefly of the laity for me to more than allude to the tremendous advancement made by medical science during the past two decades toward solving definitely and scientifically many of the immediate and remote causes of human disease; a work already magnificent in its achievement and yet if we read aright still in its infancy.

It is this modern method in laboratory work that has led directly to a world-wide public interest in disease warfare, and we find in this as in most topics, that the vast majority of intelligent people develop an acute interest just as soon as they understand. Until almost the present time the medical profession has attempted single handed to impart this knowledge, and this same profession must still in the very nature of things remain at the head of the work; yet without some broader media for the transmission to the general public of the teachings of hygienic and sanitary science the sphere of active work must remain a contracted one indeed.

We have learned through past experience that there are two broad avenues through which practically every intelligent citizen of the United States may be reached. The first of these consists of the public press; and through systematic contributions to our great dailies, weeklies and various magazines, of well selected readable articles, a vast amount of preliminary work may be accomplished. The ideas so disseminated are fruitful in a way, and yet they cannot bring about lasting systematic teaching such as we desire and must have in order to build up a permanent public education.

We must turn then to the other great channel, through which to convey this knowledge; the one which we believe offers the only opportunity for a thorough consistent course of instruction. This consists of the vast army of public instructors of youth in our grade schools, high schools and colleges. I have named these in their relative order of importance, since we must concede that in this, as in the study of most vital subjects, the

younger the child who receives such instruction, the more lasting the impressions remain.

During the first eight years of public school life, the child is for practically six hours a day under state control and receiving compulsory education; and this comprises the only period in that individual's life when it may be obliged to learn something regarding the preservation and protection of its own physical interests and its moral and legal obligations toward the individual and community interests of others. This same period in its life begins with the most impressionable and receptive age; a period when the mind is still unhampered; when concrete ideas are quickly grasped and where impressive instruction leaves a permanent imprint.

This then is the period when a simple yet broad and correct foundation for future instruction in physical race improvement should be laid. And no child is too young to receive such instruction.

In adopting this line of work in your schools, you as teachers, must hold as your first object the physical individual betterment of the pupils intrusted to your care. You study to aid them in the correction of their own weaknesses and to place those possessing such defects as nearly as possible on an equal footing with others; and yet you must not lose sight of the more important fact that this work is destined to be more far reaching than the present time and immediate needs of those whom you are striving to aid. The instruction given by you will be carried to the homes; to parents and older brothers and sisters. Not only your pupils, but the families from which they come observe a certain respect for advice which comes from the teacher. Be careful then that such teaching is not given at random; avoid above all else gross exaggeration of evils, which may lead to discredit of your work in this department when repeated to older and perhaps wiser heads. Do not attempt a definite explanation of a hygienic subject unless you yourself have studied it sufficiently to have a clear understanding and can speak with positiveness. The importance of accuracy in this will be the more appreciated when you recall that you are imparting knowledge which should in the years to come, when these same pupils become parents, create a generation which shall evince a keener interest in the physical lives of their own children and will lessen materially the obstacles and embarrassments of your future successors.

It will require no argument of mine to convince the ordinarily observant school instructor of the ruinous effect of physical neglect in school children. You have seen over and over again, probably all of you, the typical adenoid child, with its habitual mouth breathing, narrow jaws, discharging nostrils, and mask-like, expressionless countenance; you have seen such a child plodding along irresponsively; dull, stupid, apathetic; receiving reluctantly about one-fifth of the educational benefit which the state owes it; retarding the work and advancement of thirty or forty other pupils; and going forth into life with little or no advantage over the schoolless child.

You have seen, all of you, the pale, anemic and tubercular pupil in characteristic attitude; the head resting at times wearily on the hand. You have all seen children apparently stupid because they could not hear quickly; dull, because through hypermetropia they could not see words and figures clearly and who, because of embarrassment, frequently guess at answers. You have seen the myopic child, who holds the book close to the eyes in reading or studying, and who develops eye weariness, mental fatigue and headache following prolonged effort of this sort.

Some of you, at least, have seen schools closed and a community socially and industrially paralyzed almost, through sweeping epidemics of contagious disease; when, had your pupils been trained to report certain symptoms promptly and had you yourselves been trained to recognize the danger marks of disease; or had there been systematic school inspection by a competent physician, such a calamity might have been averted.

Whenever a child under your care appears distinctly below its classmates in intelligence and is making distinctly unsatisfactory progress, you may be certain that one of two conditions is present; either this pupil is suffering from an inherited congenital deficiency in intellect, or there is something radically wrong with its physical machinery.

In solving the problem of this child's deficiency, be absolutely certain that you have excluded every possible physical defect before classifying such an one as hopeless or incorrigble. Remember that the simple removal of adenoids and enlarged, diseased tonsils has restored thousands of youngsters to really brilliant careers; that the correction of various forms of deafness and eye strain has made useful citizens out of truants and shirkers; that open windows and more nourishing food in the home have been known to correct laziness and immoral tendencies.

Neither the medical profession nor the public expects of you a refined diagnosis in these cases; but, as those to whom has been entrusted the educational welfare of these children, you should possess sufficient general medical knowledge to recognize any gross physical deviation in a child; to at least rudely classify their defects and refer them to the school physician or to their own family physician for further examination. I may be permitted to speak, I believe, positively and knowingly when I say that the average public school instructor possesses a regrettable lack of knowledge regarding these things; and many of you present here to-day might in the past have saved not only the physical suffering and educational failure of some pupils, but might have saved yourselves hours and days and weeks of mental aggravation and nerve-wrack had you possessed a simple working knowledge of physical defect in school children.

I say to you then, if you are not already doing so, prepare yourselves thoroughly in this department of your school work, for it is a department, and one which in the immediate future is destined to become more and more a part of your armamentarium. The subject is not an intricate or difficult one, and with your opportunities for daily practical application of this information, you will find it truly interesting and satisfying. You should be prepared to speak in the school room, just as positively and just as confidently regarding the evils of unclean mouths—diseased

teeth and adenoids—as you would regarding a problem in arithmetic or the construction of a sentence in grammar.

Train yourselves first. Become familiar with these conditions; and once having trained your own powers of observation, you will be surprised to find how easy it is to recognize physical deviations from the normal. In fact, with a little practice and interest you will find that any serious defect in a pupil will literally force itself upon your notice. I believe that every one of you will find in your own home district a physician who will gratuitously and gladly aid you in these studies, should you require it.

Having trained yourselves, then, train the pupils under you. Impress on every child, no matter how young, the importance to itself and others, of reporting to you promptly a sore throat, a headache, an inflamed eye, a skin eruption, enlarged or tender cervical glands or any other symptoms of acute illness. Begin at the earliest age, in the lower grades, to teach in a simple way, civic and social responsibility in public health matters. Explain quarantine regulations and the conditions which necessitate them in contagious diseases. Show just why the convenience of the individual must become subservient to the community welfare. Appeal to the spirit of civic pride and national patriotism, which is easily awakened in even the youngest mind. Continue this line of teaching throughout the succeeding grades and high school course, and you will graduate boys and girls well equipped with life-long principles of the importance to self and nation of physical right living.

Little informal discussions and mutual conversations upon such subjects as "Dirt and Disease," "Care of the Teeth" (including the importance of these organs as an aid to digestion, and the method by which diseased teeth serve as an atrium through which injurious germs gain access to the system), "The Dangers of Careless Spitting," "Flys, as Carriers of Disease," "The Value of Bathing, for General Cleanliness and to Aid Elimination of Injurious Waste Material through the Sweat Glands."

Preach the gospel of fresh air in sleeping-rooms at night. Tell them why. Health maxims and stilted golden rules in mere words impress no one seriously, children least of all; but the moment a child really understands a subject of this sort, its interest is aroused and it begins forthwith, in its own way, to reason regarding it. Take advantage of occasional school happenings in connection with illness to illustrate the value of such instruction.

There are undoubtedly to-day thousands of public school instructors who have really no intelligent ideas regarding child psychology and physiology. By far the greater portion of friction between teacher and pupil, in and out of class-room, may be traced back through nervousness, to physical causes; causes perfectly capable of demonstration and correction. The average physically normal child is rarely obstinate or rebellious and seldom indeed do instances arise in which intimidation or blind physical subjection are not only utter failures, but are ruinous to the disposition of the pupil and through example of lack of self control on the part of

the one in authority, disadvantageous to the general interests of harmony and confidence which should exist between teacher and pupil. I must here repeat the statement that in every case of difficulty in appealing to or reaching finer qualities in a child's character, assume that that child has physical reasons for its lack of response until you have satisfied yourself, not once but repeatedly, that such causes do not exist.

Our normal schools should have and doubtless soon will have compulsory courses of study regarding physiologic development in children, as well as in school hygiene and sanitation; a course which will give a clearly defined understanding of the one and inseparable character of a child's mental, moral and physical makeup.

Be, first of all, then, fair to the child. This may sound to many of you like unjust criticism; and yet there are in many of our public schools of to-day teachers who are, unintentionally, yet, nevertheless, culpably, unfair. Every school child in the land to-day should have the right to demand a thorough understanding of its physiologic and psychologic construction. The educational career of a school youngster is at best a handicap race and to insure our much vaunted "square deal," due appreciation and allowance must be made for every physical defect and mental shortcoming. Study first of all the physical. No amount of patience and kindly interest can remove the stupidity born of a foul throat and nose obstruction, or reform the nervous, timid, panicky nature begotten of anemia and malnutrition. How can we expect a high degree of mental equipment and moral obligation on the part of a boy whose body is filthy; whose mouth is filled with decayed teeth; and the seat of whose trousers is noticeably imperfect? Certainly eminent self-respect under such conditions is an impossibility. Embarrassment, due to such circumstances, leads either on the one hand to a spirit of insolence and reckless bravado, or on the other to solitary melancholia and vice; and yet beneath all this tremendous physical handicap there may repose the essential makings of a perfect development under correct guidance plus the clearing away of physical rubbish.

Interpret first of all then the physical. This is the logical beginning and frequently the end of many of your most serious problems. By a process of what we of the medical profession are pleased to term diagnosis by exclusion, you may eliminate one after the other all of the commoner physical causes which retard school advancement. This boy, for instance, who drags in his work; learns mechanically and without interest; who listens only when spoken to directly; and then in a bored and indulgent manner. Your wildest efforts to induce him to concentrate his mind fail; you realize, perhaps, in a vague way that there is something wrong and you know that this one passively aggravating human object is causing you more worry and nerve wear than the forty-odd other pupils in your room. Now, under such conditions would it not be a great relief simply to know just what is the matter with this pupil, even assuming that you cannot entirely correct the trouble, which is by no means certain or even likely? With a few simple rules to guide you and a little study of the subject you can in ten minutes spent alone with this boy determine to

your own satisfaction whether he is a mouth breather; whether his mouth is filled with decaying teeth and putrefying food remains; whether he possesses evidence of tubercular glands; whether or not he is anemic and under-nourished; test his hearing and eyesight for long and short vision, and discover whether or not there is abuse at home or an environment that is stunting his mental and moral growth.

Once having sifted matters down to a basis where you know the physical material at hand and its defects, then your mind will become more peaceful since you are in a position to decide on a definite and intelligent course of management; a course which you know to be right and one in which you can persevere confidently and persistently if need be.

It is of course impossible within the limits of this address to even attempt discussing in detail the methods for detecting and correcting these ever present physical evils in school life. For the study of such methods I can only refer you to the special text-books. The recent publication "Civics and Health" by William H. Allen, a copy of which has been handed me by your county superintendent, is by far the best and most practical and comprehensive work, I believe, issued, and I am pleased that it is proposed by the Teachers' Association to take up the study of this book. It is filled with correct principles and common sense; void of technicalities and furnishes the detail in methods which you will require. It is a book which could be read and studied with profit, not only by every teacher but by every physician in the land. Time spent in study such as this will, I can assure you, repay you many times over in simplifying many of your most perplexing and harassing problems throughout your future work. It is a study which must, however, be undertaken seriously and thoroughly. Remember that you as teachers and we as physicians are not interested in physical reform spasms or fads. The growing public demand for such study but illustrates a deliberate awakening of the people to the value of correct hygienic management of school children. It is a general movement, based on newer scientific advancement and indicative of increasing public intelligence and education. It is destined in the very nature of things to continue in growth.

The time is almost at hand when phenomenal scholarships won at physical expense will be universally regarded as censurable and the school which permits it held culpable. State and national legislation will in the future prohibit in public institutions of learning such examples of mental achievement and bodily abuse. There can be in the light of our present knowledge no question or argument regarding the wisdom of placing the physical interest of young school children as paramount to all else. Nature makes little or no attempt to develop the brain of a child before the age of adolescence. She devotes practically all of her energy toward the nutritional. Her efforts are to provide first of all in the evolution of an individual a perfect physical machine, leaving the higher mental development as the crowning and as it should be, the final achievement.

Attempts to over stimulate brain development at this period of growth must result in a wrong diversion of physical strength, and the production of a highly excitable, unstable, neurotic mind and a permanently lowered

physical resistance. There are exceptional constitutions, so vigorous and robust as to withstand such methods. To the average child it is highly disadvantageous; to the physically delicate it is ruinous. I am not pleading for an unnecessary lowering of our educational requirements. The average curriculum in our public schools is probably nearly correct. What I desire to impress is the necessity for more systematic attention to the physical competency; a more natural and effective adjustment of the material machine to the mental requirements. We must study, in other words, to elevate the physical, if possible, to that point where it may meet the demands of the curriculum with no unnatural strain or sacrifice. Failure in this accomplishment would clearly call for a lowering of the requirements.

There are in every school many pupils who are hampered in their work and advancement through well-intentioned but mistaken ideas of discipline. Certainly we all recognize the necessity of orderly conduct in the class-room, and yet pupils should be trained to preserve such order unconsciously, if possible; a spirit of orderliness born of genuine school work interest and not through a concentration of mind control over body. Study to allow the utmost freedom of the body consistent with orderly work. This is an advantage which is, I believe, thoroughly appreciated by the majority of modern school instructors. Repeated experiences have taught them that prolonged periods of confinement to desks create a restless irritability of mind and body weariness; in reality increases the difficulties of real discipline and materially lowers the net results of a day's instruction. Short but frequent periods of complete relaxation refresh and brighten the pupil's intellect, just as an occasional amusing anecdote invigorates an audience during the delivery of an abstruse oration.

The teacher who can, at intervals, create a roomful of spontaneous laughter, is to be congratulated; since she thereby improves the physical in every child present and weaves closer bonds of confidence and affection between herself and pupils. The teacher who understands the physical; who converses frequently and freely with her pupils regarding the care and preservation of their bodies, will, in addition to the valuable instruction given, convince them of a personal interest which even the youngest will be quick to grasp and appreciate.

No parent is so intellectual, none so ignorant, as not to recognize the value of such interest and instruction. People generally are coming to know these things and, understanding them, they are quick to support such measures as relate to their lives, their homes and their happiness.

You, as public instructors, charged heretofore with, and held responsible for, the mental cultivation of your charges, are entering more and more into a new work with added responsibility.

There is, I believe, no profession which demands more the elements of patience, of self-control, of fortitude, of forbearance, self-denial and human love than yours, and be it said, to the everlasting glory of your profession and our nation, that the average public school teacher cheerfully meets these demands. To seriously take up the study of a new

department may for the time prove an added burden; but with the knowledge so acquired you will be in a position, I believe, to easily solve many heretofore perplexing problems; to find new and renewed interest in your psychologic studies of the child life surrounding you.

Through a clearer understanding of these physical riddles you will find at times the scales falling from your own eyes, and your feelings of antipathy and resentment toward many an incorrigible youngster turned to those of genuine interest and sympathy.

You will derive no inconsiderable amount of satisfaction in this department of your work, in knowing that you are instrumental in producing a generation of men and women physically, mentally and morally more perfect; that you are contributing to our nation millions of dollars in industrial values saved; that you are materially reducing the number of future pauper and prison charges, and that in thus preaching the gospel of physical perfection, through protection and preservation of the material elements within us, you are elevating mankind as a whole, and forging a new link in the chain of evidence that the good in this world is steadily gaining in ascendancy.

RAW AND PASTEURIZED MILK AND MILK SERUMS *

EDWARD GUDEMAN, PH.D.
CHICAGO

Milk is perhaps the most important food article of commerce of the present day, as it has been in the past, according to the earliest records that have been deciphered. Milk is the only human foodstuff that in itself contains all the ingredients of a complete and balanced food. It is also one of the very few natural complete foodstuffs that in its original raw state is fully fit for human consumption and which is and should be consumed raw. No accurate information exists of the amount of milk that is consumed daily, the nearest figures that can be given being that about one-fourth to one-half of a quart are produced and consumed per capita per day, based on the world's population.

Milk as such is recognized and referred to in all the records of the past ages. Your time is too limited to allow any historical review, and I only recall to you the legendary story of the founding of ancient Rome, the strength and vigor of the founders being said to have been due to the milk of the she-wolf that suckled them.

If it be correct to consider the importance of a food stuff by the amount of literature we find pertaining to the product, it is shown that milk is more important than any other food product. If we judge the importance of a food by the number of investigations and analyses made thereof, this again places milk at the head of the list. I believe that I am right in stating that the number of analyses of milk and its products exceed the total number of analyses of all other food stuffs. There is

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hardly a municipality, state or government that does not give attention to milk and its products, often the dairy department being the only one that exists or is organized.

Now, what is milk? Milk is the liquid emulsion secreted from the glands of those female mammals that nourish their young. Of all the commercial varieties, that obtained from the cow is the most important and the kind most universally used. In my remarks I confine myself exclusively to cow's milk, the normal secretion from the glands of the cow, leaving out of consideration milk produced shortly before or after calving, and the effect of disease on the character of milk.

There is in my estimation no such thing as "standard milk," because every milk is its own standard. With the large amount of data at hand and the tremendous number of milk analyses, of single cows and herds of all breeds and ages, under all conceivable climatic conditions and locations, in all the four quarters of the world, we are able to state within certain narrow limits what the normal is or should be, and are justified in accepting these limits for the composition of the natural normal liquid known as milk. Notwithstanding all this information, these limits cannot and should not be fixed at any absolute unchangeable point. Even if we confine ourselves, for sake of argument, to the milk of a single cow, we find that it varies, and that its composition, its quality and quantity, will vary daily, influenced by the feeding of the cow, by the physical exercise of the cow in the periods between milking, and the daily climatic changes, changes in the seasons of the year and changes in the environment, besides many other factors, which all will materially affect the composition of the milk. This being true for a single cow, how much more true it is for a number of cows, a small or large herd. Before accepting, therefore, any figures, consideration must be given to the main influencing conditions, the breed of the cow, the feeding of same, the climatic conditions and the environment, which influence the composition of milk. The best we can do is to accept a fair average composition for a normal milk, leaving out of consideration the high and low extremes, and even such a fair general average composition for one locality may be a maximum or minimum in another locality or at a different time of the year. You will see that these points are of importance in fixing a standard for normal milk, the importance being increased as the effects of such influencing factors go beyond the product itself, the standard for average normal milk necessarily being the basis, to a greater or lesser degree, for the standard of all milk products. The fat content of milk from the Holstein cows is very low compared with the fat content of the milk from the Jersey cows, one averaging about 3 per cent. against about 6 per cent. for the other, this difference being equal to the total amount of fat found in the average milk of one breed. A study of a large number of analyses, hundreds of thousands, made throughout the world, allows the accepting of a fair general composition for average normal milk, and this in my estimation may be placed at about: fat 3 per cent., and other solids, not fat, 8¼ per cent.

Notwithstanding the large variation in the actual composition of milk, it is very peculiar that the ratio existing between the ingredients themselves varies only within narrow limits, so that one is actually able, after making one or two determinations, to figure comparatively close as to the amounts of the other ingredients; the ash of milk approximates 8 to 9 per cent. of the solids not fat and the fat is about 35 per cent. of the total solids.

What are standards for any food products? Standards, especially in the United States, are absolutely the personal arbitrary opinion of a single individual or of a limited number of individuals grouped together, often political appointees, in whose control for the time being are the powers to promulgate rules and regulations as to the composition, manufacture and treatment of some, or all, food products, always subject to the change of opinion of the individuals or groups, due to influences exerted, commercial or political, and consequent modifications of the standards with such change of opinion or change in political administration. This accounts to a large extent why food standards, especially in the United States, are being changed continuously, and why they vary so widely in even neighboring sections. Standards, like the tariff, are often local issues. These personal arbitrary standards may or may not be endorsed by and be satisfactory to the producer, manufacturer and consumer, or any of them, and may or may not be in accordance with actual commercial customs or conditions.

A standard for normal milk is without doubt a great necessity to protect the consumer, milk being so easily adulterated by the addition of water (dilution), or the abstraction of some of the fat (skimming). The food value of milk depends on the amount of total solid matter contained in the milk. It is, therefore, only fair, and a matter of justice to the consumer, that some fundamental basis should be accepted through which it can be determined whether a proper amount of food substance or at least a minimum amount of food substance is contained in this product. Milk is a food, not a delicacy or a confection or a condiment; it is a universal food, valued exclusively for the amount of nourishment it contains. Milk is not a uniform simple liquid substance like water, but it is an emulsion of fat in a watery solution of proteid substances, mineral matter and carbohydrates, all of which have food value. If we therefore accept a fixed composition for normal milk, a minimum if you wish, certainly not a maximum, we will have a standard for normal milk, but it does not follow that this represents a standard milk. When the pure unadulterated secretion from the cow does not come up to this accepted standard, we are only justified in prohibiting its distribution, not its use, because it does not meet the arbitrary requirements in regard to quantitative food value, but we are *not* justified in calling such milk adulterated or impure or not up to standard; we simply can designate it as an abnormal product, having food value below the normal.

One of the main constituents of milk is the fat. As you all know, the fat being lighter than water, will rise to the surface. Milk on standing changes its condition, the fat coming to the top, and this top layer is

designated as "cream." It is immaterial whether this separation of the fat is due to gravity, or is more quickly and more closely accomplished by mechanical means of separation, the point being that we obtain two distinct milk products, one rich in fat—the cream—and one with a lesser amount of fat—the skim milk. It is impossible to reproduce the original emulsion after the fatty part has once separated, either partly or wholly.

We, therefore, can propose a definition for cream, as being that portion of the milk which rises to the surface on standing, or is separated from the milk by mechanical means, and which is richer in fat than the milk itself. Cream does not differ from milk, except in the change of ratio of the ingredients of the emulsion to each other, due to the concentration of the larger amount of the fat. The composition will, therefore, be influenced only by the amount of such concentration of the fat, and with the amount of highly concentrated fat substances separated from the milk; the extreme concentration being the separation of the fat in the milk as butter. Now, how much of a fat concentration and how great a fat separation is required to give cream? For illustration, let us suppose that all the fat in the milk gradually rises to the surface, the visible division line between the lower fat-free milk, and the upper fat-rich milk, known as the "cream line," being about two-thirds from the bottom. If we take milk from Holstein cows, containing an average of 3 per cent. fat, the upper half of the bulk would be the cream and would contain 6 per cent. fat, and would be identical, for all purposes, and show so by analysis, with the milk from Jersey cows, containing 6 per cent. fat. Or suppose we separate the cream by means of a separator, allowing one-fourth of the bulk of the milk to come off as cream. From the Holstein cow's milk we would get cream containing 12 per cent. fat, and from the Jersey cow's milk, cream containing 24 per cent. fat. For the same bulk of cream separated, that from the Jersey cow's milk would always contain twice as much fat as the cream from the Holstein cow's milk. Both creams would be pure, unadulterated, normal creams, but neither of them could be designated as a standard cream. This applies in all cases, the cream always varying with the amount of fat in the original milk, and the amount of cream separated from the milk. It is, therefore, irrational to accept any fixed figure as a standard for cream. I have not taken any extreme figures. The limits of fat in cream vary between any quantity larger than the amount of fat in the original normal milk from which it was separated, up to about 65 per cent. fat. A still higher fat content would give a butter separation instead of cream. If we, therefore, accept as the maximum amount of fat, in normal milk, 6 per cent., any milk that contains over 6 per cent. of fat would be correctly and legitimately designated as cream. As we cannot fix a definite standard for cream, it is impossible to fix a standard for cream products. You will note that there is a different principle involved in accepting some definite, fixed figures for a natural normal product such as milk, and from those applying to manufactured products such as cream, ice cream, etc. No two samples of cream, from the same milk, will be alike in percentage of butter fat, unless produced under identically the same conditions of time and

temperature, in the same size vessels and separated under the same conditions. Now ice cream is a manufactured product, containing among its ingredients milk or cream or both. Not being able to even fix a definite standard for milk or cream, you see the impossibility of fixing a standard for ice cream. All standards fixed for manufactured products are arbitrary and personal, often theoretical or scientific, sometimes directly based on a few special analyses, and generally not in accordance with the products that have been in markets for year—often not a question of what the product is or has been for ages, but what it should be according to the individual, personal, arbitrary conception of a single person, or of a committee or commission.

Milk is an excellent medium for the growth and culture of germs, and consequently is itself very easily changed from its original normal condition through the growth of germs. To obtain the best results from feeding of milk, ignoring exceptional cases, milk should be consumed *clean, fresh* and *raw*. Milk on becoming old will undergo chemical and physical changes, depending on the time, temperature and the handling which the fresh milk undergoes. The most characteristic visible change on ageing is the separation of the milk into two distinct components: first, the solids conglomerating into a mass, more or less firmly bound, often coming to the top, and secondly, the separation of the liquid watery portion, commonly designated as the whey or serum. I am not referring here to the cream or fat separation, which generally takes place more or less completely before this other separation, and is due to a difference in specific gravity of the component parts of the milk. This separation into solid and serum on ageing is due to germicidal action and carries with it radical changes in the chemical composition of the milk. Fresh, clean, raw milk on standing will become "sour." The germs or ferments that cause the "souring" producing mainly lactic acid, act very rapidly under normal conditions and the amount of acid formed is sufficient to curdle the milk, visible through this separation, into solid matter and serum. It is impossible to reproduce the original emulsion after such a separation has once taken part. In fact, it is even impossible to reproduce the original emulsion after a partial fat separation has occurred. This can be shown by the use of the ultra microscope, which will show that the "molecular" motion (Brownian movement) is not the same in milk that has stood quietly one hour compared with the same milk that has been kept in constant motion. It would carry me too far away from my specific point to go into this more in detail, although the digestibility of the milk is no doubt affected by this change in the character of the emulsion. Heating of milk has the same effect on the "molecular" motion. The effect of heating can be overcome to a great extent by the addition of colloidal substances.

The effect of "souring" of milk is known to you all, and you are familiar with the fact that a change from the normal smell, taste and looks of the milk is sufficient to inform you that that milk is not *fresh*. Sour milk is not an unwholesome article, in fact, is a very wholesome article. Buttermilk, or as it should be correctly designated, especially considering

the age we are living in, as "butter-*less*" milk, is really nothing but sour skimmed milk, containing a number of lactic acid germs, so great that the layman can hardly grasp the figures. I have had very few samples of buttermilk that contained less than 100,000,000 germs and many samples that contained ten times that number.

The germs that cause the souring of the milk are very easily destroyed, same as many other germs, by the application of a low heat. The single application of a low amount of heat for a short period of time is commonly designated as pasteurization. Confining my remarks, throughout this whole paper, to the *commercial* pasteurization of milk, I take the view that we have no real standard or normal for such pasteurization. It depends to the greatest extent on the fancy and taste and knowledge or lack of knowledge, of the individual who has charge of the pasteurization or who makes the rules and regulations governing it.

In the experiments to be referred to, the liquid portion, the serum, was used in one set, being injected into the animals; in the other experiments the milk itself was fed to the animals. I do not believe it is more than necessary to call attention to the fact that there is a radical difference to be expected when injecting the serum and when injecting the milk itself.

I make this explanatory statement to you gentlemen of the medical profession, as I have heard of some experiments that were made with the purpose of proving my results and conclusions wrong, in which no consideration was given to the fact that in duplicating my work changes were made both as to the substances injected and the quantities injected. Serum separations can easily be produced by treating fresh milk with chemicals, causing a coagulation of the fats and proteids, but such chemically separated serums differ from those due to germicidal action. Acetic, citric and lactic acids, rennet, metallic salts and other chemicals are commonly used for obtaining serum separations and are employed when testing milks with the refractometer, to determine the addition of water to milk, based on the optical determination of the specific gravity of the separated serums.

Germ action is strongly influenced by the treatment to which the raw milk has been subjected, before the germ action is allowed to take place. When raw untreated milk is allowed to age between the temperatures of 15 C. to 40 C. the natural germ development will be mainly of the lactic acid kind and the milk becomes "sour," showing a great increase of acidity. In milk that has been heated to about 65 C. or which is kept at a temperature of 1 C. or less, the germ development will be mainly of the putrefactive kind and the milk becomes putrid, generally without increase and in some cases with a decrease of acidity.

Latic acid-forming germs are destroyed at a comparatively low temperature, say below 70 C. At lower temperature, say 5 C., the lactic acid germs are very inactive and at 0 C. or less are actually dormant. The germs of putrefaction are not destroyed at a temperature of 70 C. or less; some may be but not all and these germs are active and multiply at temperatures below 0 C. Experiments have shown that if raw milk is

allowed to undergo natural fermentation between 15 C. and 40 C. that the main fermentation is of the lactic acid kind and by inoculating new sterile milk with such naturally fermented milk and making repeated successive progressive inoculations, using the last inoculated milk, after same has gone into fermentation to inoculate the next portion of sterile milk, that not more than eight to ten such successive inoculations were required to produce a fermented milk, that contained only the lactic acid germs and from which pure lactic acid cultures could be separated directly. In making these tests, the milks were allowed to stand at laboratory temperatures, 15 to 25 C., for forty-eight to ninety-six hours, during which time they went into strong lactic fermentations, became "sour."

The same lot of milk was used in all of my experiments, having been divided into three parts. One portion was allowed to go into natural lactic fermentation, a second portion was pasteurized by being heated for one hour at 70 C. and the balance, the largest portion, was sterilized by being boiled for one hour, using a reflux condenser to prevent concentration. The sterilized sample was protected against outside contamination and from it the samples were drawn for one series of experiments. This sterilized milk separated into two portions on becoming old, without fermentation taking place. A second set of experiments were made using freshly sterilized milk for making the successive inoculations, it having been found that there was no difference in the results between the use of old and fresh sterilized milks. The results were found to be that the eighth to tenth generations of germs grown in old or fresh sterilized milk originally infected with germs of raw milk that had undergone natural fermentation, were of the lactic acid kind and such fermented milks containing the eighth to tenth generation of cultured germs were identical with sterile milks to which pure lactic acid cultures were added, comparing the milks as to taste, smell and microscopic appearance.

Similar tests were made with the pasteurized milk, successive inoculations being made, using a previously inoculated sample after it had stood in the laboratory forty-eight to ninety-six hours, to inoculate the subsequent sample of the freshly sterilized milk. It was found that the lactic acid germs disappeared as far as their action was concerned and that the germs of putrefaction increased very rapidly. It was found that sterile milk inoculated with the tenth to twelfth generation of germs grown in pasteurized milk was free from active lactic germs and contained only germs of putrefaction.

No cultures were made to identify any specific kind of germs, and the term "germs of putrefaction" as used by me in this paper includes all classes of germs excepting the lactic acid or acid-forming germs. These experiments with the raw and pasteurized milks were made at the same time and under the same conditions of time and temperature, using for a few experiments old sterilized milk and for the rest freshly sterilized milk, prepared specially for each set of successive inoculations. The results are therefore directly comparable, time, temperature and material being the same for each set of experiments.

Similar results have been obtained by others, showing the growth of germs of putrefaction at the expense of acid-forming germs, with milk and other food stuffs, kept for an extended period of time at temperature of about zero C.

Such results are not at all surprising, the reason for the selective growth being simply a survival of the fittest or to state it differently, a destruction of the activity of the numerically weak by the numerically strong germs. Raw milk contains an excess of lactic acid germs and these simply destroy or consume, or cause the destruction and elimination of the other kinds, and as pasteurized milk contains only a relatively few, if any, live lactic acid germs their activity is destroyed by the germs of putrefaction at low temperatures (below 5 C. or less), being dormant or very inactive, allowing the germs of putrefaction to overpower them.

Microscopic examinations showed that as the lactic acid germs increased, the other germs actually decreased and even disappeared to such an extent that they could not be identified. Against this it was found that as the germs of putrefaction increased, the number of lactic acid germs decreased only in ratio, but not in actual number and that they did not disappear, and dead lactic germs could always be identified. These results indicate that the lactic acid germs actually consume the germs of putrefaction, destroying and eliminating them, while the putrefactive germs only destroy the life or activity of the lactic acid germs, but do not consume and eliminate them. The live lactic acid germs seem to destroy the other dead germs and also those of their own class or are the indirect cause of the elimination from the fermented milk of dead germs of all classes. Whether this is due to a sort of cannibalism or due to action of lactic and other acids produced or some other cause is open to investigation.

In milk that has undergone putrefaction, a large number of dead germs are always present. The same occurs with milk that has been heated or treated with chemical preservatives, and the decomposition of these dead germs often gives rise to formation of peculiar toxic substances, similar to animal poisons, ptomains, toxins, etc.

Putrefactive fermentation of milk introduces dead matter into the milk. Lactic acid fermentation decomposes and eliminates dead matter from the milk. Pasteurizing milk prevents the lactic acid fermentation and prepares the milk for the putrefactive fermentation. Sterilization prevents both lactic and putrefactive fermentations.

That pure cultures can be obtained by progressive successive selective growths from mixed or impure cultures is well known and is practically made use of in the culture of pure yeasts, classes of yeasts being grown that will withstand chemical reactions not withstood by the original mother yeast from which they were derived. The alcoholic fermentation industries are based on the use of special selected yeasts, to give specific results and products.

Similar conclusions as to relative selective growth of germs can be drawn from the work of Herter, Welch, Vaughn, Pawlow, Metchnikoff, Hopendyl, Koch, Ehrlich and many others, especially as to the selective

action of germs in the intestines, during the processes of digestion and as the basis for prevention and in treatment of germ diseases, indicating here only the antitoxin treatment, vaccination and the use of "606."

It does not take a vivid imagination of the layman, even, to trace here connections between causes of susceptibility and immunity and the use of serums in the treatment of germ diseases, and the causes of formation of toxins and antitoxins, ptomains and similar products and perhaps a cause of autointoxication.

A short time ago I saw the suggestion made to inoculate food with bacteria to prevent putrefaction, and while this is visionary to-day, it may be the thing of the near future, and then the food manufacturer will perhaps have a preservative acceptable to those food officials who are still averse to accept the rulings of the referee board of the United States Department of Agriculture. Personally I have long favored boiling of milk, home sterilization, and the use of buttermilk as a part of the regular home diet, although I do not believe that this will make death above the age of 100 years the rule in place of the exception.

During the last few years there has been a great deal of agitation as to how the milk supply of communities should be protected and the main bone of contention seems to have been and is still to-day, whether pasteurization, or what is called pasteurization, that is, *commercial pasteurization*, whether that is sufficient protection or not, in fact whether it is any protection at all or perhaps the opposite of health protection.

From my interpretation of the large amount of work done by many experimenters and the results of my own research and investigation work, I am firmly convinced that *commercial* pasteurization, *per se*, without many other very necessary safety-guards, often produces a directly dangerous milk. Old, stale, dead pasteurized milk is not fit for human nor animal consumption, in fact is more dangerous than the same milk of the same age, that has not been pasteurized. I firmly believe that it is necessary to more closely watch the distribution of pasteurized milk, than the distribution of similar raw milk. I am fully aware of the most excellent results that have been obtained in the distribution of pasteurized milk in Chicago, New York and other cities, but I am willing to go on record that these good results were not due to the pasteurization of the milk *per se*, but were mainly due, if not exclusively, to the selection of the dairies, the selection of the milk, to its method of distribution, using clean, individual containers, lots of ice, to the distributing of *fresh, clean*, pasteurized milk, all summed up in the care and attention given to its production and distribution, from cow to consumer. And I firmly believe even better results would have been obtained if this *fresh, clean* milk had not been pasteurized, if it had been distributed as *fresh, clean raw* milk.

Instead of using such good results as arguments in favor of commercial pasteurization, which it is not, as none of these results were obtained in pasteurizing as per requirements of most health authorities, these good results should be used as object lessons to compel the passage of ordinances covering sanitary requirements as to production and distribution

of milk and in every case should the sale of milk in bulk or from bulk, loose milk, be prohibited or restricted to retailing of one gallon or less.

And it should be required that milk be placed into the hands of the consumers, in quantity of one gallon or less, in the original, clean, sanitary package, just as it is done with many other food products, thereby protecting not alone the consumer but also the commodity. This ought to be originated and introduced by the manufacturer, and should be insisted on by the consumer, and no one could preach this to better advantage than you, gentlemen of the medical profession. The slogan should be clean, sanitary, small packages for fresh, clean milk.

The cost of a quart of loose milk from a bulk can as supplied in our poorer and congested districts is the same as the cost of a quart of milk delivered in a hermetically sealed glass container in our swell neighborhood. Our poorer classes pay exactly as much for a so-called quart of dirty and old milk, without the free delivery, as the rich pay for the full quart of the better product.

Pasteurized milk can become pretty old before it will show its age, even if examined in the laboratory, and it is only when it has actually become putrid and gives itself away through smell or taste that it becomes unfit as a marketable commodity.

Milk can be divided into three general classes, leaving out of consideration special milks, such as the modified and certified milks, which can belong to either of these three and which are specially prepared milk products, as to composition for the one, and method of production and distribution of the other. Modified milk should only be used on the physician's advice and modified according to his prescription.

We can divide milks into:

1. Raw milk.
2. Pasteurized milk, heated below 70 C.
3. Sterilized milk, heated to 100 C. or over.

Personally I do not believe in the middle way and take one of the extremes, either the raw milk or the sterilized milk. The main requirement is to get *clean* milk, and if you get that use it as *raw* milk. If you are not assured of having clean milk, when in doubt, then *boil* the milk, changing it from the first to the third class. I believe in this city it is just as important to boil the milk as it is to boil the water, this being specially true for the loose milk sold in bulk or from bulk and for the greater part of the *commercially* pasteurized milk found on the market.

I am not standing as lonesome and isolated on this recommendation to-day as I did some years ago. Health departments are getting into accord on the proposition of boiling milk. You will find many of your profession not adverse and many others who come very near to acceptance of the sterilization view, as compared with the pasteurization view.

Professor Bernhard Boeghild of the Royal Danish Agricultural College, Copenhagen, one of the greatest authorities on milk, its production and distribution, the one who introduced the model system of milk control in Copenhagen and other Danish cities—and this system has been very extensively followed by municipal authorities throughout the world—

during his lecturing tour in this country last year, stated while in Chicago that pasteurization in Denmark, not flash or continuous pasteurization, meant heating the milk to about 190 F. for not less than ten minutes, the official requirement being *"only"* 175 F. for five minutes, not sufficient. This milk then is chilled to 40 F. and *kept* at that temperature until distributed.

Heating to 190 F. for not *less* than ten minutes is somewhat closer to sterilization than the requirements of some city ordinances requiring 140 degrees for ten minutes or 165 F. for one minute, with chilling *only* down to 50 F. and no restriction as to keeping of this so-called pasteurized milk during the time of distribution. This may be commercial pasteurization, but I doubt it.

Professor Boeghild also had something to say as to getting clean milk and keeping it clean, and his clean also means clean from cow to consumer. Let me quote him as to what he said about keeping of *pasteurized* milk: "It is of great importance in using pasteurized milk not to keep the milk longer than one day. We insist (in Denmark) that pasteurized milk shall not be kept longer than twenty-four to thirty hours, only one day." This confirms absolutely what I stated and its importance justifies its repetition, that the greatest objection to pasteurized milk is that it will keep for days, seemingly fresh, not showing to the consumer how it has deteriorated; in fact it is only when it becomes actually putrid and bad smelling that it becomes an unmerchantable article of commerce. It is the absence of the living lactic germs in pasteurized milk that prevent the natural "souring," the most noticeable indication of the age of the milk. I have examined samples of pasteurized milk, bought in the open market, that contained 200,000,000 germs per c.c. and which did not indicate its age by its appearance nor by smell. If you agree with me that some germs are similar to flesh and animal matters, such a milk could not well be included in a vegetarian diet.

The milk used for the toxicity experiments was from a herd of thirty-two cows, coming from a model dairy where special attention was given to cleanliness of the cows and everything else, including the people connected with the dairy. The milk was received about twenty-four hours old and then showed a maximum germ count of 18,000 per c.c. Immediately after milking these special samples were chilled to about 2 C. and placed into sterile two-quart Mason jars, hermetically sealed with hot paraffin and kept cold. The samples were delivered to me at a temperature of about 1 to 2 C. Immediately on receipt they were thoroughly mixed and divided into four lots. These lots were designated as:

1. Raw milk.

2. Pasteurized milk. This portion was quickly heated in a water bath to 70 C. and kept at this temperature for one hour. This was then quickly cooled to laboratory temperature of about 20 C.

3. Sterilized milk. This portion was quickly heated to boiling, kept at a gentle boil for one hour, using a reflux condenser to prevent condensation.

4. Raw milk, used for analytical purposes.

The three lots used for experimental purposes were then quickly divided into smaller lots of about 150 c.c. each, approximately this amount being poured into sterile 250 c.c. Erlenmeyer flasks and immediately well corked. These smaller samples were allowed to stand in the laboratory the allotted time for each experiment, temperature ranging from 15 to 25 C. Perforated rubber stoppers were used to close the flasks, having passed through the one opening a small drying tube, filled with sterile cotton and reaching just below the rubber stopper. Through the second opening was passed a siphon tube, sealed on the outside arm, the inside shorter arm coming within half an inch of the bottom of the Erlenmeyer flask.

To draw the separated serum out of the flasks, the sealed arm of the siphon tube was clipped off, and on blowing into the top of the drying tube the siphoning of the liquid was started. A single perforated rubber stopper was placed on top of the drying tube, having a short glass tube connected to a rubber tube, closed with a pinch cock, which allowed the regulating of the speed of the siphoning.

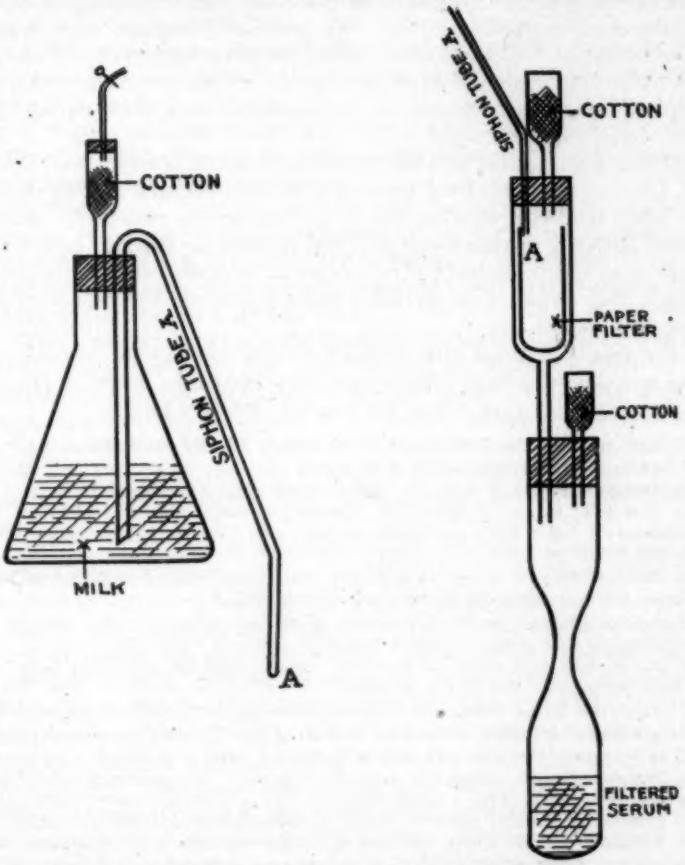
All the serums were filtered through paper, to separate any solid substances carried over mechanically. To prevent contamination during the time of siphoning and filtration, the outside siphon arm was passed through a doubly perforated rubber stopper, the other opening being protected by a small drying tube containing sterile cotton, this stopper being placed on the test-tube into which the filtered serum ran. This test-tube was drawn out about the middle, so that it could be quickly fused together, hermetically sealing it by fusion, while it was drawn away from the rest of the apparatus. The description of the apparatus is much more complicated than the apparatus and I believe the rough outline sketch is self-explanatory.

The object in using the drying tubes, sealed with sterile cotton, is to allow the entrance and escape of air and gases, without possibility of contamination of the products from outside sources. All parts of the apparatus were carefully sterilized by being heated in a hot air oven at 150 to 175 C. for not less than half an hour.

The first 10 to 15 c.c. of the filtered serum were discarded, the receiving test-tube not being attached until such quantity had been filtered. Fifteen to 25 c.c. were then caught in the test-tube which was then hermetically sealed by fusion at the collapsed point and during fusion drawn away from the rest of the apparatus.

The balance of the unfiltered serum can be forced back into the flask and on resealing the outside arm of the siphon tube can be used for other tests, of a longer period of time. Doing this produces a slight change in the mass in the flask, due to the larger part of the serum having been withdrawn, and on this account separate milk samples were used for each test. Serums from the same sample of original milk, that had stood five, eight, eleven, fourteen and seventeen days respectively, were injected in one-half c.c. amounts into guinea-pigs within two hours after filtration. The guinea-pigs remained under observation during the day. They were fed once a day, always allowing four hours to intervene between the

feeding and injection of the serum. No special attention was given to this feeding, except that the same kind of food was given to all the animals, but no account was kept of the quantity consumed. The animals were kept in separate cages, which were cleaned every morning, at which time record was made of the approximate amount and the character of the feces and urine, based on visible examination only. Accurate determinations were not required at this time, as these experiments were only



considered as preliminary to laying out a definite plan for more extensive work, and for the same reason only the general symptoms as to health of the animals was recorded, and no post-mortem examinations made.

A few experiments were made with serums separated from milk, coagulating the solids with chemicals (acetic and lactic acids, calcium chlorid and the asaprol method). In all these tests the effects of the serums from fresh, pasteurized and sterilized milks were found to be

about the same, all the animals being strongly affected. It was concluded that the effects were due to the chemicals used in obtaining the serums and not due to germ contents of the milks. This was confirmed by obtaining similar adverse results with serums separated from sterilized milks, to which had been added some of the chemicals. These experiments showed conclusively that sterilized milk acidified with acetic or lactic acids gave a different serum, from similar milk serum obtained after natural lactic acid fermentation had taken place, both samples showing the same amount of acidity. No practical differences were found using serums of freshly sterilized milks, compared with serums of sterilized milks four, seven and fourteen days old. These results showed that sterilization was complete and no contamination took place during the time of keeping the samples.

Guinea-pigs injected with serums of sterilized milks fresh, four, seven and fourteen days old, lived three days without showing any ill effects and when reinjected with serums of old raw or old pasteurized milks, reacted similarly to guinea-pigs that had received no previous injections. These experiments allowed the conclusion to be drawn, as could be anticipated, that serums from sterilized milks are sterile and do not cause germ disturbances.

The results obtained with serums from raw and pasteurized milks of same ages showed radical differences, summarized in the following experiments. One-half c.c. of serum was injected into each animal.

1. Raw milk serum, 5 days old. Guinea-pigs slightly uncomfortable for 2 to 4 hours; fully recovered inside of 24 hours.

2. Raw milk serum, 8 days old. Effects same as in Experiment 1.

3. Raw milk serum, 14 days old. Guinea-pigs more uncomfortable than in Experiments 1 and 2 for same length of time, 2 to 4 hours; bowels loose; fully recovered within 24 hours.

4. Pasteurized milk serum, 5 days old. Guinea-pigs strongly affected within 4 hours; diarrhea; death 32 to 42 hours after injection.

5. Pasteurized milk serum, 8 days old. Same symptoms as in Experiment 4. One guinea-pig died within 24 hours, the other two died within 36 hours.

6. Pasteurized milk serum, 14 days old. Same symptoms as in Experiment 5. All three guinea-pigs died within 24 hours.

7. Raw milk serum, 8 days old. Injected into guinea-pigs used in Experiment 1, being a second injection with serum of older milk. Guinea-pigs uncomfortable for 2 to 6 hours; fully recovered within 24 hours.

8. Pasteurized milk serum, 10 days old. Injected into guinea-pigs used in Experiments 1 and 7, being a third injection, two of serums of raw milks. All three guinea-pigs strongly affected; diarrhea; fully recovered within 48 hours.

9. Pasteurized milk serum, 14 days old. Injected into guinea-pigs used in Experiment 8, being a fourth injection, two of raw milk and two of pasteurized milk serums. All guinea-pigs strongly affected within 4 hours; diarrhea, with putrid feces; death within 36 hours.

10. Pasteurized milk serum, 14 days old. Injected into guinea-pigs used in Experiment 2, after giving a second injection of raw milk serum, 11 days old, the day before receiving the injection of the pasteurized milk serum 14 days old. Guinea-pigs strongly affected for 24 hours; diarrhea; fully recovered within another 48 hours.

11. Pasteurized milk serum, 17 days old. Injected into guinea-pigs that had received the previous day one injection of raw milk serum, 16 days old. Two

guinea-pigs died within 36 hours. One guinea-pig recovered within 72 hours. All strongly affected, with diarrhea and putrid feces.

12. Pasteurized milk serum 17 days old, same as used in Experiment 11. Guinea-pig died within eighteen hours; strong diarrhea; putrid feces.

13. Raw milk serum, 17 days old. Guinea-pig strongly affected; diarrhea; fully recovered within twenty-four hours.

14. Mixture of raw milk and pasteurized milk serums, 17 days old. Guinea-pigs strongly affected; diarrhea with putrid feces; death within sixty to seventy-two hours.

I believe that it is justified to draw the following conclusions from this series of experiments:

1. The serums from raw milks five to seventeen days old are not fatal to guinea-pigs, nor do they cause severe functional disturbances when injected in one-half c.c. doses.

2. The serums from pasteurized milks five to seventeen days old, when injected in one-half c.c. doses, cause severe functional disturbances and are generally fatal to guinea-pigs.

3. Guinea-pigs that have received injections of serums of raw milks seem to be immune to single injections of serums of pasteurized milk, within twenty-four hours of the first injection. The injection of serums from raw milk seems to increase the resisting power against serums from pasteurized milks, for a limited time.

Two experiments were made injecting *pasteurized* serums from raw milks, and it was found that this produced no immunity effect on the guinea-pigs to serums from pasteurized old milks. Functional disturbances were observed within one to two hours, similar to those produced by the injection of serums produced in milks through chemical agencies. This would indicate that the temporary immunity is not due to milk enzymes or milk antitoxins, but is due to the presence of active lactic acid germs.

No apparent immunity was observed using for first injections pasteurized or sterilized serums from pasteurized milk, also indicating that milk enzymes or antitoxins were not the cause of the immunity.

A few direct feeding experiments were made with two dogs, using in place of serums the milks themselves. Samples from the same lot of milk were used in all these experiments. After allowing the milk to stand the allotted predetermined time in the laboratory, 100 c.c. of the milk were mixed with 500 gm. of well-cooked meat for each feeding. The dogs were fed once a day, eating all or as much of the milk meat food as they pleased. The dogs were confined in large, roomy cages, being allowed to roam for one to two hours per day in a large yard. The dogs were kept under observation during the day. The dogs were of the same litter, female fox terriers 14 months old, of registered stock.

Dogs weighed at beginning of experiments:

Dog A = 7,400 gm.

Dog B = 7,100 gm.

Dogs were allowed to drink as much distilled water as they wanted.

1. DA. Raw milk food 7 days old fed to Dog A. No effect; feces medium soft.

2. DB. Pasteurized milk food 7 days old fed to Dog B. Vomiting one to two hours after feeding. Feces softer than from Dog A with putrid smell.

Both dogs were then fed without addition of milk for two days, being confined in their cages and kept under observation.

3. DB. Raw milk food 10 days old fed to Dog B. No effects; feces medium soft.

4. DA. Pasteurized milk food 10 days old fed to Dog A. Vomiting within one hour. Diarrhea; watery and putrid feces. Recovery within thirty-six hours. No food given on second day.

Both dogs allowed to rest for three days. Fed without milk.

5. DA. Raw milk food 14 days old fed to Dog A. No ill effects; feces soft.

6. DB. Pasteurized milk food 14 days old offered to Dog B. Refused to eat same. Allowed to starve twenty-four hours. Refused to take the food. Then fed food with raw milk 16 days old. Slight diarrhea; feces soft.

7. DA. Raw milk food 16 days old fed to Dog A. No ill effects; feces soft.

8. DAB. Dogs offered pasteurized milk food 18 days old. Both refused to eat same.

9. DAB. Dogs offered raw milk food 18 days old. Took part of same. No ill effects; feces soft.

10. DAB. Dogs fed daily for three days, one with fresh raw milk food, other fresh pasteurized milk food. No ill effects. Feces from fresh raw milk food slightly harder.

11. DAB. Dogs allowed to roam for eight days, fed twice a day without milk. Both dogs recovered weight lost during experimental period, about 300 gm. Both dogs then fed daily 500 gm. cooked meat containing pasteurized milk, 100 c.c., 5 days old. Feces became softer. Vomiting of one dog on the second day and of the other dog on the third day. Both dogs vomited on fourth day. Slight diarrhea; increased thirst. Only part of the food consumed. Both dogs refused to take the food on fifth and sixth days. Continued slight diarrhea, with soft and putrid feces. Both dogs took lots of water. No vomiting after stopping eating. Dog A. lost 1,300 gm. weight and Dog B. lost 1,100 gm. weight within seven days. Both dogs then fed cooked meat with raw milk five days old. Full recovery and return to normal weight within five days.

From these feeding experiments, I believe the following conclusions are justified:

1. Feeding dogs food containing old raw milk in strong state of lactic fermentation causes no appreciable functional disturbances.

2. Feeding dogs food containing old pasteurized milk causes strong functional disturbances, shown in loss of weight and appetite, accompanied with vomiting and diarrhea, with soft and putrid feces.

Very meager information is found in the literature as to comparative feeding experiments using raw and pasteurized milks. It seems to be indicated (?) that pigs fed on sour milk (butter-milk) are less susceptible to hog cholera than otherwise. I consider this a large and open field for investigation and experimental work, especially of the agricultural experiment stations. It is a little beyond the scope of a private laboratory, especially if such laboratory is located in a city office building.

Some very interesting results were obtained with a few children, changing the diet from pasteurized milks to raw and sterilized milks, these having been specially prepared.

1. C. Four children, aged 6 months to 2 years, suffering from diarrheal troubles, summer complaint, were given three times a day one ounce of sterilized milk, which had been inoculated with lactic cultures and then allowed to stand six days. Great improvement was noticed inside of twenty-four hours and full recovery within forty-eight hours. Examination of feces originally showed a tremen-

dous number of putrefactive germs, radically diminished after twenty-four hours and nearly absent after seventy-two hours.

2. C. Four other children aged 8 months to 2½ years suffering from diarrheal troubles, summer complaint, were given daily for two days 3½ ounces of butter-milk serums four days old. The butter-milk having been made with cultured lactic germs. Within twenty-four hours great improvement, feces harder and less putrid. Recovery after forty-eight hours and no putrid feces.

An additional dosage of 3½ ounces of butter-milk serum produced constipation.

No complete record was kept of these cases and I draw no conclusions therefrom. No doubt some of the ill effects due to the use of pasteurized milks, especially the *commercially* pasteurized milk, is not alone due to the direct action of the putrefactive germs in the milk, but is partly due to the toxic principles and the decomposition products arising from the decomposition of the dead germs themselves. I do not believe that there is much choice or difference between the decomposition products of a dead wholesome germ compared with the dead decomposition products of his very near relative, the unwholesome germ.

The lactic acid and other acid-forming germs seem to destroy and eliminate other germs, while the germs of putrefaction and non-acid-forming germs seem to destroy but do not eliminate the other germs.

I do not believe that anyone is justified to draw more than tentative conclusions from a single set or series of experiments as described to you, and I do not do so. But it seems to be very strongly indicated, to me at least, that if a milk supply is to be protected for the benefit of the public health, my results point out that real pasteurization is not sufficient, and *commercial* pasteurization, much less so. Sterilization is a much better safety-guard, home sterilization, even with its effects on the milk, change in character as to taste and possible effect on ratio of digestibility.

It certainly points out that it is fully as necessary to protect and watch pasteurized milk as raw milk, and that pasteurization, *per se*, is only protection for the benefit of manufacturers and vendors of pasteurizing machinery. *Cleanliness* is the most necessary, most essential and most efficient requirement in the production and distribution of milk, more so even for pasteurized milk than for the same aged raw milk. Milk should be watched and protected against contamination of all kinds, from cow to consumer, both inside and outside of the containers used in its distribution.

Raw milk spoiling and becoming "sour" within a short time, condemns itself and the acid-forming germs are the safety-guards, indicating to the consumer the age, that is, the actual condition of the milk. Acid-forming germs do not increase the toxicity of the milk; just the contrary.

Pasteurized milk, unless as *fresh* as the raw milk, can be and often is the cause of an infinite number of troubles, the absence of "souring" being a false indication of security.

Sterilized milk is a safe milk, being free from living germs and free from toxic substances due to their decomposition, although also free from the living active germs necessary for a complete and perfect digestion of the milk, under normal conditions.

Clean raw milk comes first; thereafter my choice is sterilized milk, fresh or canned, but if one is compelled to use commercially pasteurized milk of unknown origin and uncertain age, practice self-protection and *boil* the milk before consumption.

Commercial pasteurization is a poor makeshift, a premium offered for the distribution of old, dead, stale and often unwholesome, dirty milk. I do not care to eat dirt, filth, with or without cow's and other feces, even if same has been heated through so-called pasteurization. Pasteurization deteriorates clean milk. You can get clean milk and you can agitate for clean milk, and *clean* milk needs no pasteurization.

The ancients recognized that cleanliness was next to godliness. I believe you gentlemen more so than any one else can and should preach and bring about the recognition that *cleanliness, clean milk* is not *"next to"* but is *wholesomeness.*

I thank you for your kind attention.

DISCUSSION

A. M. Corwin:—I wish to say a word in appreciation of Dr. Gudemann's paper. I think it is good to have an outside chemist come in and try to teach us something. If his statements are true (and I believe they are) then here is something for serious consideration. What we want is clean milk. The people are entitled to clean air, clean streets, clean water, clean food and clean politics but it seems hard to get any one of them, partly due to the fact that the public is altogether too fond of sleeping. But the people occasionally wake up and when they do they usually get what they want and I believe when we get them waked up to the fact that what they want just now is clean milk, they will get it. It seems a serious question whether we are getting it now. If we are why these papers! Why all this discussion? It is just such papers as these which determine us on what we need and then help us to get it. While I believe in peace, still if to get what we should have and what the health of the people demands we have to fight, why then, I say, let us fight and in the end have peace and what we want. The Chicago Medical Society through its Milk Commission is doing much to help us get clean milk. Dairies are beginning to climb into the "band wagon" and the demand for the certified article is spreading.

That is one proposition: shall we have certified milk, which guarantees to the buyer a clean article, or shall we gloss over the surface and be willing to take any old milk, warm it up a little, kill a few germs and allow the others free road? I have here one of our city ordinances, in effect since Jan. 1, 1909. It provides, in brief, that milk, butter, cream, and ice-cream sold in this city shall be sold from cows that have passed the tuberculin test or that any milk from cows that have not had the test shall be pasteurized by the methods laid down. In other words, according to this law pasteurization while ostensibly aiming to prevent contagion from germs of typhoid, scarlet fever, diphtheria and the like, should be begun on any milk but not on tuberculin-tested cow's milk, as if the tuberculin test was sufficient to guarantee not only against tuberculosis but all other pathogenic germs.

Where is the logic of that? Pasteurization does not kill the tubercle bacillus. Tubercle bacilli must undergo a high grade of heat for some twenty minutes, and the present requirements of pasteurization are that it shall be heated at a temperature of 140 to 150 F.

It seems to me that this ordinance is not all it should be and it seems to me that this question should be open to a good deal of careful, unbiased unprejudiced investigation before we come to a conclusion. From what I have heard and read I am inclined to believe that pasteurization is not all we want and that the

Health Department instead of throwing cold water on our Milk Commission should back it up and lend it every possible aid.

Frederick A. Leusman:—The pure milk question to my mind is one of the most supreme importance in the whole domain of nutrition and dietetics. A recognition of this fact made it a matter of interest to me to follow up to a limited extent this topic in current medical literature. From what little knowledge a man may gain that way it gives me much pleasure to second the remarks made by the gentleman who has given us such an excellent paper, investigation and analysis with reference to milk and its distribution to-night. It seems to be agreed on that we must get the milk from healthy cows clean from the udder after clean collection and proper cooling as rapidly to the consumer as possible in individual containers. If the milk is lacking in freedom from excess of microbial content, then let the consumer boil it. Commercial pasteurization has many scientific enemies.

The medical profession in consensus and no one single man will have to settle the milk question definitely.

Oliver Tydings:—As to the use of tuberculin: I have used it for many years; since 1891. I have had some beautiful results. Using it early in life and early in the history of the preparation I used it many times where I would not use it to-day, and yet from a clinical standpoint I think if I had tuberculosis with a high run of temperature I would use tuberculin if for nothing more than to control the temperature.

There is one thing which has occurred to me twice in the use of tuberculin that I have never seen in any of the literature of the subject or heard mentioned. I thought on two occasions I had impending dissolution. At that time I was using P. D. & Co.'s Tuberculin R. It looked to me as though dissolution would take place in a few seconds. Both of the patients recovered, but the heart action at the time became very alarming and I must confess that since that time I have never felt easy when using it. In both of those cases I had left the tuberculin with the patient to be administered by some member of the family. When the first one reported a result of this kind I thought it was fright, but afterwards I got the same result myself when giving it and did not use it again in that case. Both of the patients died shortly afterward; that is, after a few months.

James E. Stubbs:—When doctors disagree then there is usually some of truth on both sides. There has been a great deal of talk about this question of milk, both pro and con. A great many boards of health think they know more than God. They have been banging away at this one thing for years, sometimes wanting to kill about half the cows in the United States and sometimes wanting to kill about half of the good properties in natural milk. They can see in a can of milk tubercular germs enough to kill the whole of humanity. Then as a remedy they suggest pasteurization which does not kill all of the germs and is really a detriment to the milk!

Healthy milk, kept clean, is one of the very best foods we have. The fact that bovine tuberculosis only affects children over 8 months and under eight years old does not prove much. How do we know but that the germs were latent in the child from birth and incubated in his system, that it is not bovine tuberculosis, but hereditary tuberculosis?

As Dr. Lackner has said, children of one year and over playing with other children convey it. The germ is in the living human being, moving about and scattering the infection. I do not believe there is any tuberculosis carried about by the sputum on the streets. The Health Department says there are chronic carriers spreading the disease. Call it what you please, the person who has tuberculosis and is traveling around is spreading that disease the same as they would spread scarlet fever or measles. I believe that all cases of tubercular infections are communicated from one human being to another, not by sputum, but by merely coming in contact with them. That is my strong belief; I have not come to it suddenly nor by any abstract theory (we are getting lame and limping from carrying about so many theories) but by demonstrable facts obtained by scrutiny and careful, thorough observation.

A SANITARY MILK SUPPLY FOR CITIES FROM A MEDICAL STANDPOINT

ROBERT A. BLACK, M.D.
Member Chicago Milk Commission

To the layman the medical profession may seem idealistic, demanding things that are not practical, yet we are on the firing line and certainly see the damage resulting, and can usually figure up the ultimate cost of carelessness. We have seen wonderful results in the saving of life by the use of antiseptics, still greater result from the use of asepsis, and although to us the time, labor and expense have been great, we have met the difficulty. In the demands we make on the dairyman we feel that we are not asking more than we have already done.

That there will be an increase in the cost of milk we know. We also know that there can be an increase in the cost of almost any other commodity, without serious remonstrance, yet there are loud, wild outcries of Trust the moment a progressive dairyman declares that his production of pure, clean milk means an increase in cost of one or two cents per quart. If, however, the consumer were told plainly that cheaper milk means disease germs and dirt, I do not think there would be any complaint about the increased cost, which should be cheerfully borne by the consumer.

From a medical standpoint we ask: (1) that there be clean milk with an absence of large numbers of germs and entire freedom from pathologic germs; (2) a constant nutritive value of known chemical composition with a uniform relation between the fats, sugars and albumins; (3) an unvarying resistance to early fermentative changes, so that it may be kept without extraordinary care.

In our first requirement I say absence of large numbers of bacteria, because aseptic milk is practically impossible and would add a needles expense to the dairyman. Also it would appear from experiments that certain germs are comparatively harmless in small numbers and may be even beneficial.

According to Heinemann's experiments, the most common germ is the *Streptococcus lacticus*, and while (from their method of growing) these germs are indistinguishable from streptococci that produce disease, they have to be passed through several animals before they will produce disease in the human body. This germ is largely concerned in the production of lactic acid.

Seiffert further contends that this germ with some of the staphylococci group and some of the colon bacilli group is responsible for lactic acid which prevents a neutral or alkaline reaction taking place, which is so essential for the growth of many disease-producing germs.

That it is practical can be shown by a summary of our city certified milk which I have taken from four farms. These samples were all taken on delivery to the consumer when the milk was twenty-four to thirty-six hours old.

Farm 1 showed in fifty-one samples with average of 5,612 germs in each 15 drops.

Farm 2 showed in sixty samples with average of 4,078 germs in each 15 drops.

Farm 3 showed in forty-three samples with average of 6,502 germs in each 15 drops.

Farm 4 showed in seventeen samples with average of 2,553 germs in each 15 drops.

A total of 171 consecutive examinations with an average 4,686 germs in each 15 drops. It might be interesting to add that one of these farms, and not the one producing the highest count, was equipped for producing this clean milk at an expenditure of $1,600.

That milk should be entirely free from disease-producing germs is shown conclusively by a summary of epidemics prepared by Busey and Kober of which I only cite a few to show the most intense need of this requirement.

A typhoid epidemic in Clifton, England, showed 244 cases of which 230 came from one dairy.

A scarlet fever epidemic in Boston in 1907 produced 227 cases; of these 195 came from the same dairy and occurred in four days' time.

A diphtheria epidemic occurred in Ashtabula of 111 cases with 23 deaths; 100 cases came from families that used milk from one dairy.

Hart has collected a series of milk-borne diphtheria epidemic which total 1,051 cases with 210 deaths. Surely with a life toll of this character there should be no hesitancy in demanding no disease-producing germ if any expense can avoid it.

Statistics on tubercular infections directly transmitted are harder to find, yet we can be on the safe side by taking the conclusions of several able workers who have recently gathered proof.

Anderson in 223 samples of milk showed that 6.72 per cent. of the samples contained tubercular germs virulent to guinea-pigs.

Trosh examined 7,097 samples of market milk and found tubercular germs in 594.

Schroeder says, whatever chances we ourselves may take as adults, we have no right to neglect our duty to children. When we examine the reports of a host of investigators, we find though there may be two morphologically distinct types of the tuberculæ bacillus, that they are connected by transition forms, and if the two commoner types (human and bovine, but neither restricted to man or cattle) really differ in an important way it is that the type commoner in cattle is of much higher disease-producing virulence than that common to man."

Dr. Parks, with 20 cases of general tubercular infection found the human type of bacilli was causative in fourteen cases and the bovine type in six. In one case of abdominal tuberculosis of bovine type he was able to obtain milk from the farm which supplied the child's milk, and both samples showed tubercular bacilli which produced fatal tuberculosis in guinea-pigs.

Besides these twenty cases he reports 35 surgical cases of tuberculosis of which twenty-nine were swollen glands. Twenty of these were due to the human type, while nine were of bovine origin.

These figures certainly show why milk should be produced only from tuberculin tested cows, and the more so since Salmon, after a careful study of all facts in regard to the tuberculin reaction on cattle, says, "It is an accurate method of determining whether the animal has tuberculosis; that by its use the diseased animal is detected and removed from the herd, thereby protecting other cattle; that tuberculin has no ill effect on the healthy animal."

Already we see the progressive dairyman taking advantage of this test. Let us help him along by demanding it for all our milk cows.

That milk must have a constant nutritive value and definite chemical composition is already recognized by law, for protecting the consumer from fraud and dangerous dilutants and preservatives, and also for the use of infants. Without a definite standard it would be impossible to correctly modify milk.

The Certified Milk Commission has adopted a standard of 3.5 per cent. proteids; 3.5 to 4.5 per cent. fats, and 4 per cent. sugar. Should milk for drinking purposes show a higher per cent. fat than this, it should be so labeled, or enough milk of lower composition should be introduced to bring the food value down.

To obtain the ideal milk for infant feeding, we should take one step further and demand that the dairyman use cows which produce a small size fat globule in their milk.

Our third requirement, an unvarying resistance to early fermentative changes, demands as little handling as possible; Rosenau experimentally shows that clumping or clustering is one of the factors that cause an apparent decrease in the number of germs. Milk that is shaken or stirred vigorously shows more germs growing on culture media. The next reason for fewer handlings is that each handling only adds another source of infection.

Milk should be subjected to a steady cool temperature, apparently best around 40 Fahrenheit. Rosenau found that freezing milk for ten minutes had no effect on the germ-destroying power, that freezing for 24 hours before inoculating with bacillus typhosus had no influence on its restraining power as far as the bacillus was concerned, but apparently lessens this power for the bacillus forming lactic

acid. Yet freezing does produce changes in milk, for each winter we see cases of food poisoning in infants which can be attributed to thawed frozen milk, hence, doctors usually warn mothers against permitting babies to have such milk.

That it should not be allowed to stay at a temperature much higher is shown by Freudenreich, who subjected a sample of milk containing 153,000 germs to the cubic inch to a temperature of 59° Fahrenheit, and one hour later found it to contain 539,750 germs, and at the end of twenty-five hours to contain 85,000,000 germs. The effects on milk of higher degrees of heat sufficient to kill bacteria (which is conceded to be with very few exceptions around 140° to 165° Fahrenheit) is still the subject of much controversy. It is generally agreed that milk has a germicidal action, and that this action is present only in raw milk, and continues according to Heinemann for eight to ten hours. Boiling or heating to about 80° Centigrade destroys this action, lesser degrees of heat vary with the micro-organism to be destroyed.

The effects of heat, 140° to 165° Fahrenheit, on the various ferments is also a subject of controversy, and the bulk of the evidence seems to be that pasteurization done in scientific laboratories and by ultra scientific men is not in the least injurious, yet in my opinion commercial pasteurization of a dirty milk supply is to be condemned as is the dirty milk supply. Mildly stating it, it is far from the ideal method and I think is positively harmful in the manner in which it is now commercially carried on. With the amount of advertising that pasteurized milk has received, expended on demanding clean milk we certainly would be closer to our goal, which is, clean, pure milk.

Many times do I hear, when baby is taken ill with enteritis, and the milk is investigated, the mother reply, "Oh, it cannot be from the milk because the label says, pasteurized." Such is the false sense of security which is now developed that the mother is often absolutely careless as to feeding pure milk to the babe. And it is only too late when she realizes the real import of commercially pasteurized milk. Why have we not taught her in the beginning to demand pure milk?

Having a desire to see the condition of this pasteurized milk when it reached the babe, I had my assistant, Dr. W. P. Curtis, collect samples. These samples were taken directly from the baby's bottle, with the exception of three taken from a hospital, and taken during the past month when the weather has been ideal to keep down germ growth. You can imagine what they might be during the warm summer months.

For a three low count we found 3,440—7,140—22,540.

For a three high count 2,580,330—426,520—864,640. Such a varying of counts certainly fails to impress us with the efficiency of commercial pasteurization.

They show one infection with a germ growing a green colony which certainly is foreign to the germs found in milk and often causes the green bowel movement so common in summertime. We are led to assume that if commercial pasteurization does one thing, it diminishes the growth of the streptococci lactis, which is so often a protection to milk. The greater number of these are killed, although it has been recently shown that a few strains of strepto will stand as high as 170° which accounts for the eventual souring of this milk.

Stoakley says that sour milk is rarely the cause of ptomaine poisoning, and from our experience with infants, we have found it to be a life saving food under some conditions. How often souring is delayed by incomplete pasteurization, so that the mother tasting the milk finds it sweet and gives her babe the most violent of poisons, which according to Vaughan, may be due to tyrotoxin or a similar compound and according to Novy to toxins set free by poisoning peptonizing bacteria which he proved to be capable of producing death in guinea-pigs and puppies by diarrhea in four or five days.

The manager of one of our larger pasteurizing plants gave the following description of their method:

"Our milk is first run through the separator to remove any sediment. Imagine what the sediment of milk may be; imagine our permitting any sediment of

manure, dead flies and hair in any other articles of food. Does this straining out of sediment and pasteurizing not tend to make the dairyman careless?"

Then, when the milk enters the pasteurizer it has a temperature of about 60°. Just the temperature that Freudenreich showed to produce 85,000,000; then heated to a temperature of 165° for one and one-half minutes or two minutes, then run through a water cooler at fifty. Rogers has recently shown that a temperature of 185° is the lowest at which this flash pasteurizing can be effective, yet, I know from talking to various dairymen that they consider 165° sufficient. Of course, they have to, for a higher temperature would destroy their cream line and make their milk a disgraced dirty milk and place it where it really belongs.

Does that sound like a method warranting us physicians in recommending pasteurized milk, or does it not sound more like a commercial way of keeping milk sweet till it can have a chance to kill some babe?

Dr. Freeman of New York, after a careful study of milk from a medical standpoint, concludes that while milk is in no way changed by pasteurization for 40 minutes at 140°, yet commercial pasteurization is to be condemned.

Dr. Evans of Philadelphia, in an examination of five large pasteurizing plants during the month of May found two plants using the flash method of pasteurizing averaged about 750,000 and the three using the Holding method averaged about 575,000 germs.

This certainly leaves a most dangerous milk when we consider how from various experiments it has been shown that the lactic acid germ is one of the easier killed although a few hardy strains remain.

Dr. Koller's work at Rochester certainly speaks for itself, and if I have his figures right, they certainly show a reduction in infant mortality far in excess of any figures yet shown by commercial pasteurization of a dirty milk, so that instead of contending and temporizing with improper pasteurization, or pasteurization of improperly procured milk, or improper care of pasteurized milk, let us demand and work for pure, clean milk.

Work with the dairyman to have him produce it, work with the general public to keep it so after receiving it, and last, but not least, occasionally remind our own profession of the important place they have in this battle.

DISCUSSION

Robert A. Black: I would like to add my voice of praise to Dr. Gudeman's paper. Some three months ago I carefully analyzed about fifteen specimens of commercially pasteurized milk, taken at random from the ordinary milk distributed at people's doors. The least number of bacteria in any sample was 3,440 and the largest 2,580,000, the others ranging all the way between these figures, but in none were there less than 20,000 except in the one specimen above mentioned which contained 3,440.

Since that time I have followed Dr. Gudeman's advice and ordered all milk, when commercially pasteurized, boiled. One thing which has been noted from clinical experience which has not yet been mentioned is that when children fed on pasteurized milk become ill they respond far more slowly to medication than do children fed on raw milk. This is a point not to be overlooked in the question of infant feeding.

Edward Gudeman (closing the discussion): There are a few remarks which I should like to make. In the first place I wish to state that my views on pasteurization have been mentioned before Dr. Evans ever became Health Commissioner. It is not that I disagree with him personally, but with the general view which not only he, but many others hold.

It was also stated that the health department was not in harmony with the idea of certified milk (clean milk). This may have been the case but is not in "harmony" with their present view, if I correctly interpret their last Health Bulletin of Jan. 14, 1911, which I quote in part as follows: "Suggestions for proper, efficient, safe, reliable pasteurization.

"1. That the dairy farm, barn, milk house, yard, etc., is in proper sanitary condition and properly equipped.

"2. Be sure that the milk you treat comes from healthy, tuberculin tested, non-reacting cows.

"3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13. All referring to cleanliness and care in handling of the milk and its distribution.

"14. Always repasteurize at once, milk of which you have any doubt as to whether it has been treated at the proper temperature or for the proper time.

"15, 16 and 17, also refer to tests for cleanliness and proper pasteurization."

As these recommendations are identical with the recommendations and requirements for certification of milk according to your Society, I cannot conceive how the Health Department can be adverse to certified milk, in fact must now be in favor of it. The only difficulty as to certified milk at present is its scarcity. If the Health Department would use, say, $100,000 of its appropriation to distribute certified milk in our poorer districts during the summer months, distribute it free or at a nominal price, I believe that the infant mortality would be materially reduced.

HEREDITY IN CANCER*

HENRY W. ABELMANN, M.D.
Pathologist to Evangelical Deaconess Hospital
CHICAGO.

In speaking of the heredity in syphilis and tuberculosis we call on the *Spirochæta pallida* and *Bacillus tuberculosis* to guide us. In order that we may be guided by a parasite we will assume that cancer (carcinoma and sarcoma) is an infectious disease and will first give reasons for ascribing a parasite nature to these malignant tumors, before taking up the subject of heredity.

SELECTIVE ACTION OF PARASITES; CELLULAR SUSCEPTIBILITY.

No one questions the selective action of certain bacteria for certain cells. The pneumococcus usually affects the lung. The gonococcus the urethra. The meningococcus the meninges. The diphtheria bacillus, the tonsils and upper air passages, etc. These different organisms seem to have an elective affinity for the respective tissues. In certain hematogenous infections the selective action is shown in a marked degree. The organism that causes acute articular rheumatism usually gains entrance through the tonsils and once in the circulating blood has all tissues and organs at its disposal. Yet the organism remains more or less indifferent to all tissues till it strikes the synovial membranes of the larger joints of the extremities or later attacks the endocardium, and with a degree of fineness selects the mitral valve. The plasmodium malariæ can reach one and all tissue cells of the body but its action is limited to one specific type of tissue cell, the red blood corpuscle. The tubercle bacillus can reach and can affect any tissue or organ in the body. Yet it is wonderful how it spares so many, and as the rule only affects certain few as the lung, lymph glands, bone. Does cancer not behave in a similar manner? Does cancer not manifest selective action?

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* Read in a Symposium on Heredity before the Chicago Medical Society, May 4, 1910.

The uterus, the skin, the breast and the stomach are organs that mark the frequent seat of carcinomatous development. The fascia, subcutaneous and osseous tissues furnish especially favorable soil for sarcomatous proliferation. Are these the organs and tissues sprinkled with misplaced embryonal matrices? Are these the organs and tissues that suffer anatomic and physiologic dislocations from loss of tension? Reasoning from analogy it would be justifiable to hold that these are the organs and tissues least resistant to a parasite, that these are the organs and tissues which offer environment favorable for cancer development, that these are the organs and tissues most susceptible to this particular infection. And note, it is not only the natural degree of cellular susceptibility or microbic electivity that gives us the topography of cancer for there are certain predisposing causes which undoubtedly exert a profound influence in precipitating the disease. These predisposing causes render the normal resistant cell susceptible to infection. They create what the Latins term a *Locus minoris resistentiæ*. They prepare the soil for the reception and growth of cancer.

PREDISPOSING CAUSES: CAUSES WHICH RENDER CELLS SUSCEPTIBLE TO INFECTION.

Age.—Cancer visits the embryo in utero, makes its rounds to the cradles of infants, frequents youth and the middle aged and man already burdened with years carries it with him to his last resting place. No age therefore is exempt from cancer, either carcinoma or sarcoma.

It appears that age determines more or less on what kind of tissue the parasite is to act. There is no doubt that in different periods of life alterations in the various tissue cells take place. We all know that it is uncommon to meet with cases of osteomyelitis in adults while the disease is frequent in the young. It thus seems that youth renders cells of connective tissue more susceptible to infection, while the epithelial and endothelial cells are more antagonistic to the invasion of the microbe of cancer; hence sarcoma predominates at this age. Senility, on the other hand, pulls down the flag of sarcoma and hoists carcinoma as the banner of malignancy.

Age seems to play another important role; juvenile tissue, although antagonistic to carcinoma, allows it to pursue an unusually malignant course when it does occur and offers little resistance to the growing tumor cells. The senile state, on the other hand, favors the impregnation of epithelial (and endothelial cells[1]) which leads to development of carcinoma but exercises at the same time an inhibitory influence on cancer growth.

Trauma.—It is a well known fact that trauma frequently precipitates inflammatory processes. Yet no amount of trauma can produce inflammation unless the injured tissues become infected with the microbes of inflammation. It is also a well known fact that trauma frequently precipitates cancerous processes; yet the disease frequently originates where there is no evidence of previous injuries, and here again it is only natural to infer that cancer can only develop where the essential cause is present,

1. Tumors springing from these cells are classed with sarcomas by most authorities.

the specific microbe of cancer. The influence of trauma is more pronounced in the etiology of sarcoma than in that of carcinoma. Sarcoma not infrequently develops at the seat of fractures. The periosteum, the lymph glands, sexual glands and mammæ are most frequently affected by sarcoma.

Irritations.—Irritations, both immediate and prolonged, frequently result in the formation of an infection atrium. Cuts, punctures, abrasions often open the door to infection. Cancer not infrequently starts in chronic inflammatory products as tuberculosis. The chronic inflammation set up by gall stones, gastric ulcer, ulcus crusis, not infrequently have cancer engrafted upon them. Cancer of the tongue can frequently be attributed to irritation of bad teeth. Psoriasis and ichthyosis at times also till the soil for cancer. Cancer of the uterus is frequently initiated by tears, erosion and chronic endometritis with irritating discharges; cancer of the lip, by the tobacco pipe. Chronic eczema of the nipple frequently leads to cancer development; cancer of the breasts can in cases be attributed to previous mastitis. Warts, pigmented moles and burns not infrequently mark the sight of cancer growth. *X*-ray exposures also increase cellular susceptibility to cancer infection.

Metaplasia.—To the conversion of one cancer cell type into another the term *metaplasia* has been applied. To believe that a connective tissue cell or sarcoma cell can metamorphose into a carcinoma cell is to believe that a connective tissue cell can produce an epithelial cell. Would it not make a chaos of all our cellular pathology? Granting the existence of a parasite this train of pathologic conditions could represent expressions of parasitic activity. The parasite invading the cell nucleus incites it to abnormal proliferation. The germs living in symbiosis with the cell are carried over during the process of division, so that each daughter cell is charged with the infective agent. And as the descendents of the abnormal proliferating cells retain the morphologic and biologic peculiarities of their parentage, a tumor must result whose component cancer cells bear the image of its prototype. It must then necessarily follow that a squamous cell can only give birth to a squamous cell carcinoma; a cylindrical cell can only give birth to a cylindrical carcinoma, and a connective tissue cell can only produce a sarcoma when infected with the specific micro-organism, and that these different cancers, as well as all intermediate types, can only procreate their kind.

It is true that in spontaneous cancer both in man and animal one finds different histologic pictures side by side. In experimental tumors we find them side by side as well as isolated, and we can watch a carcinoma cell type lose itself and disappear in a developing sarcoma, and vice versa. What theory other than the parasitic could offer a better explanation of this cell variation and still harmonize so well with the other manifestations of cancerous disease. A bacteriologic translation of this phenomenon could be had in that more than one cell type is infected by the parasite and the cell which has the advantage over another cell type is going to destroy the weaker—in the *struggle for existence.*

The phenomenon of *metaplasia* is undoubtedly often overlooked in cases where closely related cell types become infected. It might be interesting to cite a few cases of *metaplasie*:

1. A case of Paget's disease, a squamous cell carcinoma, which came under my observation, was operated on; the resistive tumor was a cylindrical cell carcinoma.

2. A case of Dr. Edward H. Ochsner, from which I made sections at the time of operation, showed a typical spindle cell sarcoma and sections at autopsy six months later, typical glandular carcinoma.

3. Schmorl cites a case where after an extirpation of a carcinoma of the thyroid, the resistive tumor showed a transformation into sarcoma with sarcoma metastasis.

4. A case of carcinoma of the prostate is reported where among the metastatic tumors there was found an osteo-chondro-sarcoma.

5. Hart reports a carcinoma ventriculi with metastatic tumor of the esophagus producing a squamous cell carcinoma, etc. The same striking phenomenon has been noted in animal experimentation:

1. Levin injected a carcinoma of human ovary into a dog and obtained a sarcoma which he carried twelve generations.

2. Daynet and Mauclaire injected rectal carcinoma into the peritoneal cavity of a rat and there developed what the author termed a sarco-carcinoma. Another experimenter transplanted a spindle cell sarcoma into a rat and found a mixture of carcinoma and sarcoma in the second generation. Viewing these facts one can see how metaplasie would strongly support the parasitic theory.

The epidemic outbreak of cancer in cattle adds probability to the infectious theory. The spontaneous development of cancer in healthy mice living together with cancerous mice as reported by Gaylord, Clowes, Bashford and others, also that healthy mice contract the disease when put in cages which cancerous mice once occupied is most suggestive of the infective character of cancer. Morau reports an outbreak of cancer in mice which he brought about by transferring bed-bugs from cages inhabited by cancerous mice to cages housing healthy mice. Pick has shown that cancer occurs as endemic in brook-trout hatcheries. Gaylord's interesting work with fish goes to show the infectiousness of cancer. In this connection I might state that cancer is said to be most prevalent along river sources and in localities subjected to floods.

The epidemic and endemic outbreak of cancer in the human family also speaks for the infectiousness of cancer. In certain localities the disease prevails more than in others. Certain houses have furnished cancer for many decades and not a few members of families who have lived in them have succumbed to the disease. These houses can certainly be looked upon as infected dwellings.

It is known that a patient has given the disease to the laundress, that wives have infected husbands; many surgeons have died of cancer. It is interesting to note that individuals who contract the disease seldom develop the same type of cancer with which the patient was afflicted. This would speak for infection and not cancer cell transplantation. It

would tend to show that the cancer cell is non-essential in starting new cancer growths. The fact that the successful inoculations of human cancer in lower animals do not always produce the type of cancer which is injected would confirm the above. An animal that is infected has its own tissue undergo a cancerous change. While an animal that has cancer cells engrafted upon it simply feeds the transplanted cancer cell and they continue to grow in this animal. Its tissue cells remain free from malignant degeneration as long as they can free themselves of infection.

Auto-Inoculability.—The evidence of cell implantation has something in common with the behavior of parasites.

1. Cancer growing in the track of the trochar after aspiration of pleuritic fluid from endothelioma of the pleura or cancer ascites.

2. The occurrence of cancer in the stitch-tract following an operation for cancer.

3. Cases are reported of cancer of the stomach from swallowed cancer material of the esophagus.

4. Cancer of the lung from aspirated cancer material of the trachea.

The evidence of so-called contact infection as seen in cancer of the lip, larynx, and vulva. The occurrence of multiple primary carcinoma as occasionally seen in xeroderma pigmentosa and senile keratosis would suggest infection.

HISTOLOGICAL RESEMBLANCE TO OTHER INFECTIOUS DISEASES.

In human pathology we meet with many cases where we are unable microscopically to differentiate malignancy from chronic inflammation. A round cell sarcoma can bear such a strong resemblance to granulation tissue that it is difficult, if not impossible, to distinguish it without the clinical history.

1. A tuberculous infection can so stimulate a sarcoma that even with the aid of the microscope and clinical history mistakes are made.

2. Syphilitic tumors can also simulate sarcoma very closely, histologically, so that Hanseman remarks that often only the minutest details of all clinical and biological factors can clear up the diagnosis.

3. In leukemia and pseudo-leukemia we see hyperplasia of lymph structures, which undoubtedly are brought about by some germ and not infrequently do we find that as the disease progresses the cells become malignant. This striking similarity to these infectious diseases would again suggest the infective origin of cancer. Often the injection of human cancer in animals results in the development of so-called granulomata. This phenomenon should not be slighted, as we know, for example, that typhoid, diphtheria and many other viri when injected into lower animals, never produce the same pathologic pictures we see in man. It might well be that many of the chronic inflammatory processes which we are in the habit of regarding as predisposing causes are nothing less than cancer in themselves.

Ehrlich's work on immunity of cancer tends to show that the active immunity of mice to tumors is a panimmunity rather than a specific

immunity for any particular type of cancer, which is presumptive evidence of the parasitic nature of the disease. The immunity obtained by blood injections and transfusions, as reported by Bashford and Crile, respectively, the reaction of certain serums, the tendency to hemolysis, and again taking into consideration the rapid and peculiar growth of cancer, the leukocytic infiltration which usually accompanies it, the production of metastasis, the same chronic poisoning, the cachexia, that the many different kinds of cancer bring about with the destruction of the general health, all coordinate beautifully with known parasitic manifestations. With this overwhelming evidence of infectivity we are justified in assuming the parasitic origin of cancer and are now in a position to discuss the subject of heredity.

HEREDITY.

While the hereditary aptitude for carcinoma is recognized by most authorities, the hereditary predisposition to sarcoma is questioned. There is so much suggestive evidence that carcinoma and sarcoma are simply different expressions of a single disease, that is to say, have one and the same causative agent, that it appears justifiable to assume this position. It would establish the connecting link of these two groups of tumors which would give weight and strength to the parasitic theory. Text-books deal with carcinoma and sarcoma separately. Our schools teach us to regard carcinoma and sarcoma as different diseases, but wherein lies the difference. Virchow separated these two tumors simply on a histologic basis. All cancerous tumors, whether carcinoma or sarcoma, manifest the same clinical tendencies and it is their like behavior that suggests their common etiology. Statistics as to the heredity of cancer consequently must fall short. Granting that a common parasite underlies carcinoma and sarcoma and knowing that carcinoma is the disease of the parent and sarcoma the disease of youth, the heredity for cancer must play the same rôle as does the heredity for tuberculosis. It is generally recognized that tuberculous parents give rise in the offspring to an hereditary predisposition to tuberculous infections. Children born to tuberculous parents are more susceptible and coming more in contact with the tubercle bacilli are more liable to acquire the disease. So it is reasonable to infer that cancer in the parent gives rise in the offspring to an hereditary predisposition to cancer infection and being surrounded by the germs of cancer are more liable to acquire the disease. In certain families the heredity of cancer has been shown in a marked manner. Cases have been reported where many members of a family died of cancer, and most interesting instances of carcinoma running through families in several successive generations. Broca relates an instance of hereditary predisposition to carcinoma in which a lady, four of her daughters and eleven of her grandchildren died of carcinoma. Very frequently carcinoma is not only seen in the parent and offspring, but also occupies the same localities. Napoleon died of carcinoma of the stomach, as did his father, brother and two of his sisters. Tuberculosis more or less dupli-

cates this phenomenon. We find that tuberculosis appears as phthisis in one family and as glandular tuberculosis in another.

The result obtained in experimental breeding also indicates the heredity of cancer. Dr. Tyzzer tells us of a female mouse with a large cancerous growth, which he mated with a normal healthy mouse. In a short time this couple had a hundred descendents, of which sixty-five survived to mature age and twenty developed cancerous tumors, of which they ultimately died. One out of every three, in other words, fell victims to the disease. It does not necessarily follow that the cancer parasite was directly transmitted from mother to offspring as a post-conceptional intra-uterine infection for we know that tuberculous children of tuberculous parents acquire not the disease as a rule, but inherit a constitution especially adapted to it; and so many of the descendants of cancerous parents are furnished with a specific culture media that favors development of these tumors.

No race is exempt from cancer. The parasite reigns supreme. Its power is felt over the surface of the globe. It kills annually tens of thousands in the United States alone. It not only attacks man but many of the lower animals. Certain races are more susceptible than others. The Indian is said to be singularly immune. It is reasonable to suppose from analogy to other infectious diseases, that a natural immunity to cancer infection exists and that freedom from infection is often the result of hereditary influence. Autopsies show that nearly all of us have had tuberculosis, are having tuberculosis, and will have tuberculosis and that our cells are fighting the disease every day. We know that many of the bacilli carriers or those who are surrounded by tubercle bacilli have thousands of microscopical tubercular lesions during a lifetime, that make their appearance and vanish again, leaving no trace *in situ* or record of same in the gray cells of the patient. And so it is only natural to infer that you and I have had cancer, are having cancer, and will have cancer and if people keep on dying with cancer, I am safe in saying, will have had cancer.

There is so much in common between cancer and certain diseases whose microbic origin has been well established that we are justified in the hope of ultimately finding the germ of cancer.

Improved methods of serodiagnostics will give us the disease in its incipiency. The future will be active in the practice of prophylaxis, active in the art of healing cancer by rational therapeutics, a specific anti-cancer serum. I feel sure that prophesied results will be realized in time. In closing I have transposed some of Goethe's philosophy:

Wilst du immer weiter schweifen
Sieh (die Wahrheit) liegt so nah
Lerne nur (den Keim) ergreifen
Denn (der Keim) ist immer da.

TWO INSUFFICIENTLY APPRECIATED BATHS *

BERNARD FANTUS, M.D.
Professor of Materia Medica and Therapeutics and Assistant Professor of Clinical Medicine, College of Medicine of the University of Illinois
CHICAGO, ILL.

While it may justly be said that the whole subject of hydrotherapy is not sufficiently appreciated by the medical profession, there are two special baths that are hardly ever used in private practice, though they are by no means very difficult to improvise, which produce certain therapeutic results that could not be obtained in any other way. I refer to the effervescent and the continuous bath.

The Effervescent Bath.—The carbonated and the oxygenated bath may be discussed under this heading, the essential feature of both of which is the presence of bubbles of gas. The chief value of the gas lies in the simple physical fact that gas is a much poorer heat conductor than is water, and in the physiologic fact that the degree of our sensation of cold depends on the rapidity with which heat is withdrawn from certain sensory nerve endings in the skin. This is the reason why different substances at the same temperature give us different temperature sensations; why, for instance, a carpet feels warmer than a wooden floor, and the latter seems warmer than stone or cement floor, all at the same temperature. For the same reason, while air at the temperature of 70 F. feels comfortable, water at that temperature feels cold. Gas between 80 and 90 F. feels quite warm, while water at that temperature feels cool. The moment the body is immersed in an effervescent bath, the surface becomes studded with innumerable pearls of gas; and these cause a feeling of warmth to take the place of the chilliness that would otherwise be experienced. That it is the gas that produces this effect can easily be proved by brushing away the bubbles from any portion of the skin while in an effervescent bath at 80 or 90 F. Instantly, a sensation of chilliness is experienced in the part bare of bubbles, to be replaced by a feeling of warmth as soon as the bubbles have formed again. Hence the first rule in the technic of the effervescent bath is: that the patient must not move after having entered the bath, and that he must not be rubbed.

We may now ask ourselves, what is the effect of the effervescent bath on the system; is it that of an exposure of the body to gas or to water at that temperature?

Regarding the circulation this question has been answered by the careful researches of Otfried Müller,[1] who showed that there was practically *no difference in the effect of carbonated and of ordinary baths at the same temperature on blood pressure or pulse rate.* Baths below the neutral point, 95 F., raise the blood pressure and lessen the pulse rate; the change being the greater the lower the temperature. Plethysmographic observations have shown that, in spite of the ruddiness of the skin due to dilatation of the superficial capillaries, there is contraction of the deeper

* Read before the West-Side Branch of the Chicago Medical Society, Oct. 17, 1910.
1. Deutsch. Archiv. f. klin. Med., bd., 74.

vessels, which is evidently the cause of the rise in blood pressure, for the heart at the same time beats more slowly.

All this shows that these baths are not a means of resting the heart, as was erroneously supposed on account of the redness of the skin and the slowing of the pulse produced by them. The heart must expel more blood with each contraction and against a greater resistance. Hence these baths constitute a method of exercising, not of resting the heart. They are, indeed, a veritable heart gymnastic, whose special value lies in the fact that the degree of exercise demanded of the heart can be more exquisitely graded than by any other known agency.

Winternitz has shown that the carbonated bath produces an increase in the depth but a slowing in the frequency of the respirations, which is evidently favorable to the action of the heart.

Matthes[2] has shown that carbonated baths are as effective for the reduction of febrile temperature as are plain baths, and that they are much more pleasant to the patient. He, therefore, advocates them as antipyretic in those fever cases in which ordinary baths produce a good deal of shivering and chilliness. It would be well if this recommendation of Matthes were more generally put into practice. It may be pointed out here again that, in contradistinction to the ordinary cold bath in fever, rubbing must not be applied; indeed, it is not necessary, as the carbon dioxid produces dilatation of the skin capillaries that we induce, much less effectually, however, by the rubbing.

These baths have, as is well known, made a special reputation for themselves in the treatment of heart disease; and one who is not familiar with them is most likely to think of them in connection with the severer cases of cardiac disturbance, and may use them as a last resort when all else fails. Should one, however, commit the error of using them in such a case for the first time, one could probably not be induced to try them again.

Carbonated baths are absolutely contraindicated in all marked disturbances of cardiac compensation; whenever, for instance, there is dyspnea even during rest. They are also contraindicated in cases with a tendency to embolism, with hemorrhages, or with stenocardiac attacks, as well as in angina pectoris.

The effervescent baths are useful in myocardial weakness of all kinds, provided the heart has still some reserve power left or has recovered some reserve power under rest and digitalis. By means of them convalescence can certainly be hastened. They are especially useful in heart disease in which digitalis is not well borne.

The technic of the carbonated bath is, on the whole, quite simple. For a strong bath, two pounds of sodium bicarbonate and one and a half pints of commercial muriatic acid are used. At the first bath, however, only one-fourth of this quantity is used; and, as the temperature of the bath is lowered, the quantity of the effervescing ingredients is progressively increased. It probably is of no very great importance whether the 1, 2 or 3 per cent. of salt are added in more exact imitation of the Nau-

2. Clin. Hydrother., Jena, 1903.

heim bath or not. The sodium bicarbonate is dissolved first in the bath water; and, just before the patient enters the bath, the acid preferably diluted with an equal quantity of water is discharged underneath the surface of the water from an inverted bottle or an irrigator.

The temperature of the first bath should be 95 to 90 F. If this is well tolerated, the temperature is gradually reduced to 80, and even to 75 F., excepting in arteriosclerotic or in nephritic cases in which it is well not to go below 85 F.

The duration of the bath is at first five minutes; at subsequent baths it may be increased to seven, ten, fifteen, then twenty minutes. The bath-room should be well ventilated, and not warmer than 65 F.

After the bath the patient should not be permitted to dry himself, but should be carefully rubbed dry by an attendant. One hour's rest in the recumbent posture should follow each bath, and rest for a similar period should precede it. In the first week a bath may be given every other day, later every day.

While a healthy person is not distressed by the carbon dioxid given off freely from the bath water, it occasionally happens that a patient becomes dyspneic during the bath. It may be that in just such cases the oxygenated bath, one of the most recent of hydriatic procedures, might be superior to the carbonated bath. For the production of the oxygenated bath the "Perogen bath salts" (Morgenstein & Co., New York, composed of sodium perborate with a catalyzer) or similar product may be used. I doubt, however, whether the oxygenated bath will be found in practice to be much superior to the carbonated bath, most especially as the former does not cause nearly as much hyperemia of the skin and sensation of warmth as the latter; and as, so far as I can see, the effervescent bath owes its value mainly to the fact that it is a cool bath much less unpleasant and much more certain to be accompanied and followed by a good reaction than a plain bath at the same temperature.

The Continuous Bath means nothing more or less than putting a patient in a bath-tub full of water, and keeping him there for days, weeks, or months as the case may require. To Hebra, the great dermatologist, belongs the credit of having been the first to use the continuous bath; and pemphigus was probably the first disease in which it was employed. Kaposi kept a case of pemphigus in the continuous bath for four years with the greatest benefit.

The indications for the continuous bath are as follows: (1) for the constant removal of profuse discharges; (2) for soothing effect on the surface; (3) for sedative action on the nervous system; (4) as antipyretic.

1. Unapproachable in its results is the continuous bath in cases with profuse and offensive discharges; as, for instance, from large abscesses or from sloughing rectal or vaginal carcinomata with foul-smelling urinary and fecal fistulæ, or in cases of extensive gangrene. I had the opportunity of studying the effect of the continuous bath on an enormous abscess that had completely undermined the whole of the skin overlying

the pelvis. It had started as an ischio-rectal abscess, broken into the scrotum, and then extended upward on the body in all directions. After free incisions had been made and a voluminous dressing been applied, it was found that the patient saturated his dressings with horribly offensive pus in a few hours, so that it would have been necessary to dress his wound at least four times a day, and even then the odor of the patient would have been almost insupportable. When we placed this man in the continuous bath, he thought that his last hour had come, that his case was so bad that we intended to drown him in order to get rid of him. But he soon found himself very comfortable, and then objected to being taken out of the tub, which we did, however, once a day to cleanse the tub thoroughly and to anoint the skin with petrolatum. After ten days and nights in the bath, the condition had cleared up sufficiently to permit of ordinary dressing. The patient left the hospital in about a month with his wounds practically healed. Somewhat later I had the misfortune of having under my care a very similar case in another hospital. The continuous bath was something unheard of in that institution and impossible to obtain. The patient died of pyemia, evidently produced by squeezing into the circulation some of the infected clots from thrombosed veins during the process of dressing.

2. For its soothing effect on the surface, it is most especially in the treatment of very extensive burns that the continuous bath is almost indispensable in general practice. No matter how extensive the burn, the patient feels quite comfortable soon after having been placed into the bath, the painful process of dressing is altogether dispensed with, suppuration is antagonized, fever kept down, bad odor abolished, and rapid healing favored. It is similarly useful in extensive skin diseases, e. g., pemphigus. The water-bed has long been used in the prevention of bed-sores; but for their cure, in case they have become very extensive or infected, the continuous bath is needed.

3. Prolonged immersion in water at neutral temperature has a wonderfully soothing effect on the central nervous system. Who has not experienced the pleasant languor produced by a warm bath of even moderate duration? Psychiatrists find the prolonged bath one of the best and most harmless sedatives in the agitated forms of insanity. So marked is this effect in mania that it is even considered of diagnostic importance, that is, that a case of mental excitation not favorably influenced by this treatment is probably not a case of mania. However, other forms of agitation and delirium, even delirium tremens, are also usually favorably affected. In destructive diseases of the spinal cord, as in transverse myelitis, with urinary and fecal incontinence, pain, hyperesthesia, paresthesia and spasms, the continuous bath is a blessing, not only by relieving the symptoms by a sedative effect on the nervous system but also by preventing bed-sores which in this condition are generally considered unavoidable.

4. Finally, it may be mentioned that, if the temperature of the continuous bath is kept at a somewhat lower point than the one indicated

above, say about 88 F., it becomes a mild but efficient heat-abstracting medium, much more agreeable to the patient than the cold bath and particularly useful where violent delirium, involuntaries, and a tendency to bed-sores serve as additional indications.

Technic.—As the patient is expected to remain in the bath for so long a time, everything must be done to make him comfortable in it. For this reason, a sheet must be suspended within the tub in such a way as to have it clear the bottom of the tub when the patient is lying on it as on a hammock; hence this bath has also been called "hammock-bath." A rubber pillow should be provided for the head, and one for the heels, which latter had better be left out of the water, if possible, as the swelling and wrinkling of the skin produced by imbibition of water causes a disagreeable sensation in them. To prevent this puckering of the skin as much as possible, the whole of the skin should be anointed with petrolatum or wool-fat before the patient is placed in the bath.

The temperature of the water in the tub must not be permitted to exceed 100 F., nor fall below 95 F. If kept within these limits, the bath has practically no effect on the body-temperature, circulation, respiration, or perspiration. A bath between 95 and 100 F. may, therefore, be called a neutral bath. To our skin it gives the sensation of warmth and comfort. To maintain the temperature between these limits, a good supply of hot water is necessary and means are needed for adding it to the tub and for the removal of water when the tub has become too full. This is best secured by a continuous inflow and outflow arrangement, such as is provided, with all other conveniences, in tubs made especially for this purpose by manufacturers of hydriatric apparatus. I believe that a hospital that does not possess such a tub has no right to make the claim of being completely equipped with all modern appliances. Improvization is always troublesome, yet possible. The ordinary bath-tub in private houses is usually large enough for a child, but too small for an adult. The sheet may be suspended by means of carpenter's clamps, also by strong hooks, or by bath seat support. Hot water may be added and removed by the dipperful, or an alcohol lamp may be placed below the bath-tub, if inflow and outflow facilities be not provided with the tub.

The tub is covered with a board to protect the patient against exposure and to serve as a table at the same time, or else blankets may be used, which are kept from becoming wet by putting a rubber sheet underneath them, and placing them on supports laid across the top of the tub.

The patient eats and sleeps in the tub. The constant attendance of a nurse is, of course, required. It is not necessary to remove the patient for defecation, urination, or menstruation. Once a day the patient is lifted out of the water and thoroughly cleansed with soap and brush. The water in the tub is then changed completely and the tub cleansed.

REAL AND SO-CALLED INCONTINENCE AND ITS TREATMENT

F. Kreissl, M.D.
CHICAGO

In spite of our improved methods of examination, much confusion still exists in regard to the correct diagnosis, and the etiology of the various forms of disturbances in the act of micturition, and consequently the therapeutic attempts often fail. Admitting this to be partly due to careless examination, it cannot be denied that the unfortunate selection and incorrect interpretation of such terms as incontinence, neurosis, enuresis, vesical atony, hypertony and paresis are responsible for many failures to successfully deal with the difficulty.

The term incontinence should designate the inability of the bladder to retain even a small amount of urine as it enters the viscus from above; a condition which we find in paralysis of the vesical sphincter or in acute inflammatory and ulcerative processes in the bladder. As most of us are interpreting the condition, incontinence means the involuntary act of urination along its normal route.

In order to avoid confusion as much as possible the etiology should be considered in the classification of the cases, the best of which, while not an ideal one, has been established by Legueu. He differentiates:

1. Incontinence of traumatic origin.
2. Incontinence of nervous origin.
3. Incontinence produced by reflex.
4. Incontinence of urinary origin.
5. So-called functional incontinence or enuresis.
6. Incontinence of urethral origin in women.

Incontinence may be complete or partial, it may be continuous or appear at intervals, the urine may be expelled in a good stream or in the shape of dribbling.

1. The incontinence of traumatic origin is frequently observed in women after forcible dilatation of the urethra for explorative or operative purposes; as a result of cicatrization at the vesical sphincter after operations for vesico-vaginal fistula; or following a trauma during the act of labor.

In men after injuries to the pelvis and perineum, in accidents involving severe blows, concussion or crushing of the parts, and also as a post-operative complication following prostatectomy. In some of these cases the sphincter resumes its activity sooner or later; others require surgical repair.

2. The incontinence of central origin appears as part of the symptoms of medullar meningitis, myelitis transversa, Pott's disease, osteitis of the vertebræ, diphtheritic paralysis, general paralysis, tabes. Indeed in tabes incontinence is diagnostically a very valuable preatactic symptom, appearing as it often does as the only one and earliest manifestation of the disease. Very generally the incontinence in these cases is a result of anatomic lesions in the course of which the efficiency of the detrusor

muscle becomes more or less impaired. The inevitable result is retention of urine, which, when the quantity passes the normal capacity of the bladder, causes the vesical sphincter to yield to the pressure, whereupon the surplus urine escapes by dribbling. Some of these cases are curable; in others we have to resort to the palliative treatment, the methodical regular evacuation of the bladder by aseptic catheterization.

It might not be out of place to mention the similarity of some of the symptoms of tabes and of neurasthenia. The coincidence of such symp-

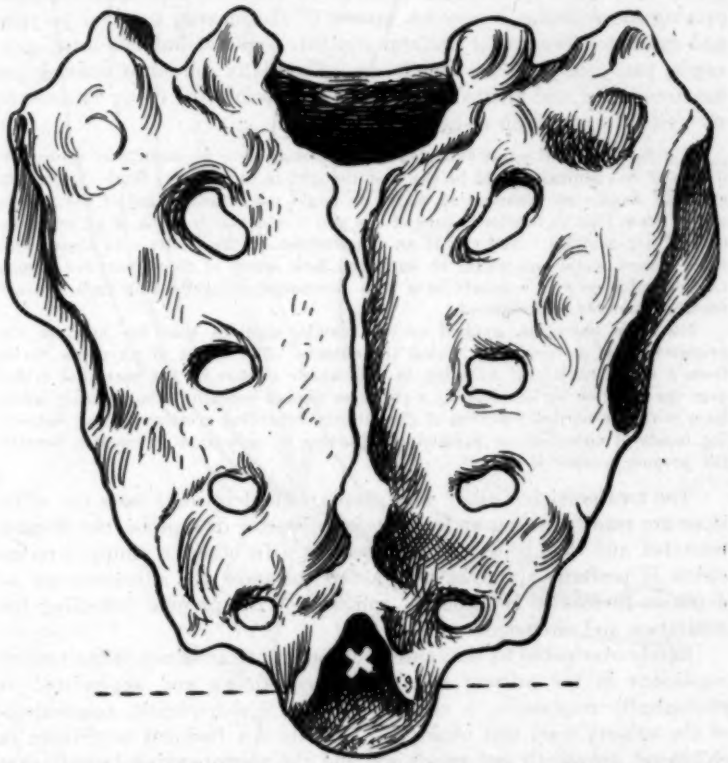

Fig. 1.—Topography of sacral canal, X indicating entrance in epidural canal.

toms with incontinence should therefore not find one off his guard and the possibility of tabes should be considered.

3. Incontinence by reflex is frequently observed in rectal polypus and prolapse, rectal fistula, colitis and anal fissures. It is also a concomitant symptom of subinvolution of the uterus *in puerperio* and of the physiologic involution of the genitals of old women, senile incontinence. The discovery and removal of the original cause will invariably cure the urinary difficulty except of course in senile incontinence. For the latter condition, which does not seem amenable to local procedures, I have found

the epidural injection with physiologic salt solution very satisfactory. The principle and technic of this method I shall discuss later on.

Group 4 includes a large number of various essential troubles in the urinary tract, some due to malformations, others to an inflammatory process and others caused by abnormal constitution of the urine.

In malformations the trouble may originate in retention or be caused by reflex irritation. The mode of action then is explained by a complete or partial inhibition of the cerebral center through an exaggerated excitation of the medullar center. Among the more common malformations causing incontinence I mention atresia of the meatus, urethral polypus and caruncles, congenital urethral stricture and last but not least, phymosis, particularly in the female sex. Especially the latter anomaly, if not recognized and treated as such, is responsible for many failures in successfully combating so-called enuresis.

If a male child or adult suffering from enuresis were to consult us, an examination of his genitals would be the first thought in our mind. Were the patient an adult female an examination might or might not be made, but if she were a girl of from four to fourteen years of age you would hardly think of an examination of her genitals. And yet if an examination of the genitals in these cases were always made one would be surprised how many of them recorded among the incurable ones of enuresis have been erroneously diagnosed as such and are readily amenable to treatment.

The term phymosis, applied to the female, signifies that the hood of the prepuce cannot be retracted behind the clitoris. The extent of phymosis varies from a slight unilateral adhesion to a complete closure of the marginal orifice over the anterior surface leaving a pouch or pocket beneath. The anomaly interferes with the normal function of the clitoris, retarding erection by the restricting bands of adhesions or producing irritation by collection of smegma beneath the prepuce.—(Quirck.)

The treatment is usually very simple, indeed in some cases the adhesions are readily broken up by a Kocher dissector or a probe, the prepuce retracted and that is all that is necessary. In others a simple circumcision is performed and in only a few instances the adhesions are so dense as to require longitudinal splitting of the prepuce preceding the separation and circumcision.

Rarely overlooked as the cause of incontinence are acute inflammatory conditions in the urinary tract. But less known and appreciated as etiologically responsible is chronic pyelitis, pyelonephritis, tuberculosis of the urinary tract and nephritis. Pyelitis is a frequent occurrence in childhood, frequently not recognized and the accompanying incontinence classified as enuresis with subsequent poor therapeutic results.

The incontinence in these cases may be explained by reno-vesical reflex, caused by the renal irritation; the bladder is stimulated to expel its contents. If this impulse reaches the brain center the patient wakes up and empties the bladder. If, however, the impulse is not of sufficient intensity it extends only to the spinal center and the evacuation occurs while the patient is asleep. This form of incontinence is readily differentiated from enuresis by the presence of pus in the urine and the other symptoms of pyelitis or pyonephrosis. An examination of the urine as a routine procedure in every case of incontinence would therefore materi-

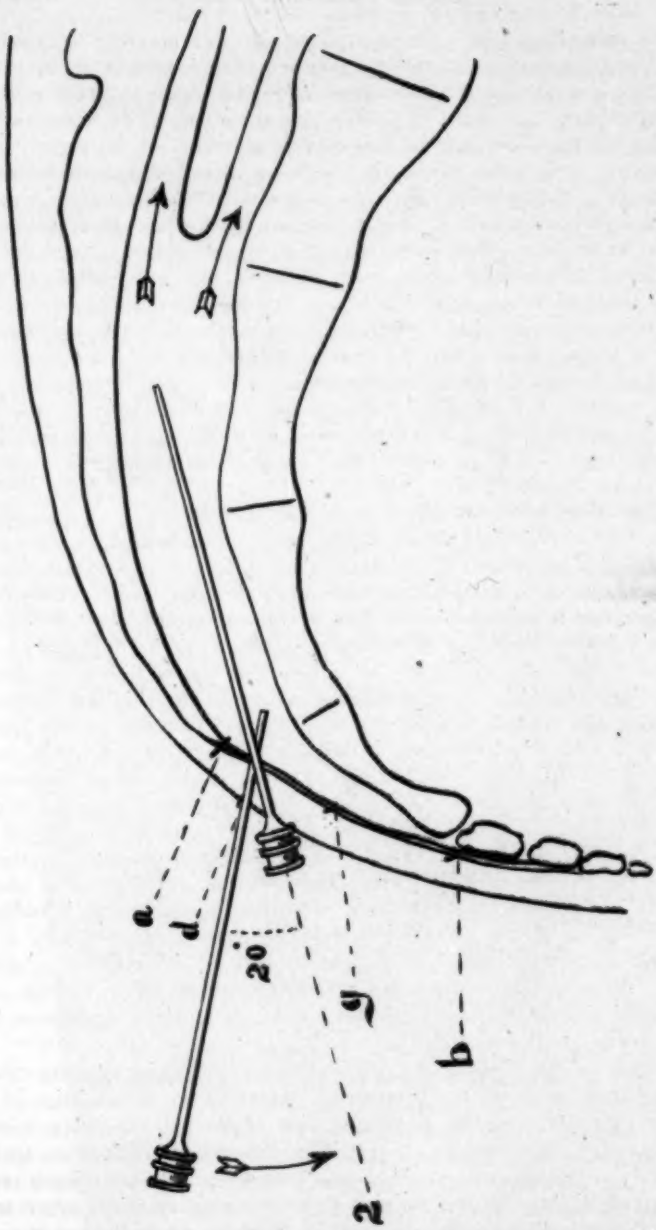

Fig. 2.—Diagram showing correct positions of needle. First position to penetrate membrane. Second position to proceed in canal after penetration of membrane.

ally assist in avoiding an erroneous diagnosis and unsuccessful therapeutic measures.

The various forms of cystitis, gonorrheal, coli, tubercular, calculosa, etc., are also likely to produce incontinence and it is clear that a causative treatment will generally suffice to restore normal functions.

Permit me to remind you that tubercular cystitis in childhood is not a rarity. It is more frequently diagnosed nowadays due to improved methods of diagnosis, but the coincidence with incontinence might still lead to pronounce such a case as enuresis, particularly so if the urine seems to be clear. However, it should be remembered that macroscopically clear urine is oftentimes found in renal and vesical tuberculosis as long as no secondary infection occurs. In fact, the presence of vesical or renal symptoms with a persistently clear and acid urine should cause one to suspect tuberculosis in the urogenital tract.

That abnormal constitution of the urine, hyperacidity, phosphaturia, oxaluria, etc., will act as an irritant to the extent of producing more or less congestion in the trigone and vesical neck with subsequent nocturnal incontinence, is too well known to require more than being mentioned for completeness' sake.

The incontinence spoken of in prostate hypertrophy is not an incontinence at all, but an overflow of the much distended bladder enhanced by the displacement of the fibers of the vesical sphincter; anatomically the sphincter still exists but its function as such has ceased. Atrophy of the prostate is accompanied by frequent urination and nocturnal incontinence and is due to the retrogressive process in the sphincter fibers.

5. As enuresis, which may be either nocturnal or diurnal, a disease is designated which occurs almost exclusively among children. In early infancy it is normal, in adult life it is rare and then due to very special reasons. Characteristic of the disease is a sudden expulsion of the entire quantity of urine from the bladder, generally during sleep. The expulsion occurs not only when the bladder is full but often takes place during the early hours of sleep before much urine has accumulated. During the day the child usually has control over its sphincter, although in extreme cases the enuresis is both diurnal and nocturnal. The patients of this group are generally neuropathics, presenting the ancestral inheritance of hysteria, epilepsy, alcoholism, syphilis, mania, neurasthenia, hypochondria or incontinence. The heredity may be either direct or collateral. These children oftentimes present congenital malformations, such as facial asymmetry, harelip, dental defects, cleft palate, strabismus, hernia, ectopic testicle, low forehead.

Even in the absence of such defects some of these patients exhibit other disorders in the sensitive nerves, hyperesthesia, the abolition of the pharynx reflex, abolition or exaggeration of the patellar reflex, tremor, stammering, twitching of the eyelids. The trouble disappears spontaneously as the patients get older, or if persisting up to maturity it ceases as a rule during the first pregnancy or after great emotions or an acute exanthematic disease. It rarely persists, however, up to the age of maturity and it seems as if the awakening of the function of the generative

organs does assist in the disappearance of the disorder by auto-suggestion.

The majority of these cases of incontinence are of psychic origin and the result of a neglect in training of the bladder. However, it is possible that a preceding cystitis or pyelitis might leave the trigone and the vesical neck in a very sensitive condition which in the presence of the above mentioned congenital predisposition will render such children more susceptible to the trouble. And, indeed, on the examination of the urine we find sometimes evidence of slight vesical catarrh and cystoscopically the area around the vesical neck appears more or less congested.

For a better understanding permit me to state that voluntary micturition can be easily performed only when the bladder is pretty well distended.

It is difficult when the organ is nearly empty and the reflex chain thereby rendered imperfect. After early infancy the spinal center for micturition comes more and more under the control of the subcortical inhibition which ultimately becomes dominant so that in adult life retention is very much more common than true incontinence. This physiologic mechanism just outlined still operates imperfectly in childhood, thus the subcortical inhibition is not quite equal to controlling an imperative reflex. Children are therefore more subject than adults to incontinence from vesical over-distention or a physical or psychical shock. There is some diversion of opinion as to the age when micturition becomes at least partly voluntary. Some state that control is acquired during the first year, others give a somewhat later period. At any rate children cannot be depended on to hold their urine longer than fifteen minutes to thirty minutes before the middle of the second year.—(Wachheim.)

Very young infants empty the bladder so frequently because of its very limited capacity. The brain does not yet exert any influence to control the act by contraction of the sphincter fibers; no regulation, no suppression of the desire exists yet, nor any need for it as it does when the child grows older. In some children this process is retarded. The child retains its pollakiuria during the day; it is a slave to its bladder owing to the frequent calls to urinate. During the night conditions are the same as far as production of the urine is concerned; but the sleep being too deep to awaken the child the calls to urinate are not perceived by the cortical center. Hereby the incontinence is established. The child mutters incessantly while asleep, it is thinking and dreaming of the act of micturition and the dream is an occasion for the incontinence. Upon awakening the recollection of the dream has vanished, but the result is palpable and visible. While thus undoubtedly the psychical moment plays an important part in the origin of enuresis, it is equally true that lack of training just at this time is responsible for the forming of a habit, the habit of rolling in filth. The atony of the vesical sphincter, the paresis of the circular fibers of the urethra upon which Guyon has built up his theory and his method of treatment of enuresis does not correspond with the facts because these children have originally the same control over their sphincter like all others.—(Legueu.)

It must be admitted that the diagnosis of enuresis offers some difficulties. But taking into account the anamnesis, the manifestations of hereditary neuropathy and the absence of palpable lesions likely to produce a functional disturbance, it should be possible to recognize real enuresis in the majority of these cases.

Most of the children present a general nervousness, irritability, capriciousness and excessive mental activity. It is furthermore characteristic that enuresis usually begins a few years after control has become estab-

lished. Even after arriving at the conclusion that we are dealing with enuresis, we should consider the possibility of epilepsy. In the latter condition the patient usually presents other symptoms of the disease. Furthermore in the epileptic type incontinence occurs at irregular intervals, rarely night after night and certainly not habitually. On inquiring we might also learn that the child is screaming in his sleep, that he grinds his teeth, that blood-stained froth is observed or the evidence of injuries to tongue and lips. However, some of these attacks are mild enough to pass without any of these manifestations; indeed, if occurring during the day involuntary micturition might take place without a complete loss of consciousness, only a slight dizziness being complained of. The French neurologists call this form of epilepsy *petit mal* in contradistinction to the fully-developed typical attacks which are designated as *grand mal*. In doubtful cases the administration of bromids should be helpful for the diagnosis.

The prognosis of enuresis should be given with a certain degree of reserve on account of the hereditary stigma which is present in the majority of these cases and it becomes more unfavorable the older the patient. It is equally unfavorable when the incontinence is diurnal and nocturnal. These cases are among the most stubborn ones. It is, however, more favorable with the approach of puberty for anatomic and physiologic reasons.

There are few other diseases for which such a variety of therapeutic measures has been devised as for enuresis. Most of them are a signal failure. Others seem to exert some beneficial influence and very few occasionally produce lasting results. I mention the psychic treatment, the attempt to educate the bladder by hypnotic suggestions. Among the mechanical procedures massage of the vesical sphincter through the rectum or vagina gives satisfaction occasionally but the latter route does not recommend itself for obvious reasons. Successful to a certain degree is also the elevation to 30 degrees of the foot end of the bed in which the child is sleeping. Urethral, urethro-vaginal and urethro-rectal faradization is also employed with varying luck. The same applies to vibration, the passing of metal sounds and the application of strong silver nitrate solutions to the vesical neck. It seems that frequently the mental effect produced by these various manipulations deserves quite as much credit for the success as anything else. However, many of these cases are complicated by an abnormal relaxation of the sphincter apparatus of the urethra of which condition you can easily assure yourself by passing a bougie of appropriate size through the deep urethra into the bladder. Under normal conditions you will feel a decided resistance as soon as the instrument enters the membranous urethra, while if passed on a male patient of the above group no resistance at all is encountred: the bougie simply slides into the bladder. It is this class of patients that is mostly benefited by the employment of the faradic current or other irritating applications. Pronounced improvement is observed after endo-urethral faradization, much less if any when the electrodes are placed outside on the perineum in the rectum and above the symphysis. The urethral

electrode, with the exception of the small-sized metal olive tip, should be insulated, the current in the beginning very weak and the application not extending over five minutes. The current should be very frequently interrupted, for instance every five seconds for two to five seconds, as the continuous faradization of any muscle will have a weakening instead of a toning effect. These treatments should be given daily for five days and each time resumed in the same manner after an interval of three days (faradic cycle). Usually four to six cycles will be required.

Among the drugs in vogue belladonna and atropin yield some good results. It does not act, as is believed, by allaying vesical irritation, but as an anti-spasmodic. It is, however, necessary to give belladonna in gradually increasing doses commencing with one-seventh of a grain and pushing it up as high as 1, 2 and even 3 grains. Rapid improvement is occasionally observed after the administration of the extract of rhus aromatica in doses of 10 to 15 drops twice a day, and of boric acid in doses of 10 to 20 grains three times daily. The same may be said of bornival, which is dispensed in capsules, three capsules to be taken daily. Sodium bicarbonate will be found useful when the urine of such patients shows a high degree of acidity. It should be given in doses of ½ to 1 teaspoonful in 2 ounces of water after the evening meal.

A more rational and successful method was devised some years ago by Brissaud.

Its underlying principle is to make the patient perform voluntarily under some responsible person's control the movement which has been so often repeated subconsciously. The child is urged to empty its bladder at regular hours during the day and is awakened at regular intervals during the night, the intervals being timed so as to anticipate and intercept the involuntary act if possible. In moderately severe cases urination should be urged upon arising, at nine o'clock, at noon, at three, six and at bedtime. Bad cases require a two-hours' interval during the day. Since the involuntary urination as a rule occurs within two hours after retiring, the child should be aroused within an hour or an hour and a half, to urinate. This is sufficient for many cases; in others this precaution has to be repeated several times during the night. This treatment I admit makes great demands on the endurance and perseverance of the patient, his family and his physician, but essential for a good result is the strict observance of the exact hour day by day and night after night. It may be assisted by cutting off all fluids in the late afternoon hours and evening, and by restricting the quantity of the evening meal. In addition a general hygienic treatment and tonics will be helpful for the co-existing anemia, chlorosis or other debilities. The treatment should be kept up for several months and then gradually discontinued. It may be stated that even if a cure is effected a tendency to relapse remains, a tendency which is common to all forms of neuroses.—(Wachheim.)

Perhaps the promptest and at the same time a perfectly harmless method which we possess to cure incontinence are the epidural injections of normal salt solution recommended by Cathlin in 1901. A Pravaz or Record syringe holding 10 c.c. is employed with platinum-iridum needles of 6 cm. length and 1 mm. circumference. The child should be placed in the Sims' position with legs flexed and the thighs tightly drawn towards the abdomen, whereby the obturator membrane of the sacral canal is tensely stretched. The sacral region and the skin for quite a distance from the operating field is thoroughly cleansed as before any

other operation, and then the entrance in the sacral canal located by means of certain landmarks which are: The two last (fifth) posterior inferior osseous tubercles and the last spinous process of the os sacrum. By three lines connecting these three points a triangle is formed, the base of which is between the two ossicles and the apex at the spinous process. Just below the latter is the entrance into the sacral canal.

The needle is held firmly between thumb, index and middle fingers of the right hand. The index finger pressed against the apex of the sacral triangle renders the skin tense. The needle held at an angle of twenty degrees to the horizontal is plunged through the tissues until a distinct sensation similar to perforating a tense drumhead is felt, which indicates that the point of the needle has passed through the obturator membrane and entered the sacral canal. The proximal end of the needle is now depressed towards the sacrum and by maintaining its position in the middle line pushed forward into the canal to the length of three to four cm., according to the age of the child.

If pushed up higher than four cm. the subarachnoidal space might be injured; if pushed up less than three cm. the fluid would fail to enter the epidural space. If blood flows from the needle no injection should be then made. If the needle is freely movable sideways it is not in the epidural canal, and another attempt must be made to enter it. If the correct position of the needle is assured, its cap is held with the left thumb and index finger, the syringe attached to the cap, and the liquid slowly injected into the sacral canal. Not more than three to five c.c. of the solution should be injected at the first treatment. The needle is then withdrawn and the region of the puncture is covered with a piece of zinc oxid plaster, or with collodion. The injection may be repeated in from two to five day intervals, and the quantity, if necessary, increased to ten c.c. and even twenty c.c. The effect is sometimes apparent after the first injection; sometimes a dozen or more are required before any result manifests itself. (It is hardly necessary to say that spina bifida is an absolute contra-indication for this method.)

The benefit derived from this method is, in my opinion, due to the direct mechanical effect of the volume of fluid on the spinal centers, a veritable vertebral trauma, the effect of which depends on the quantity of fluid which we inject. In some cases two to five c.c. will suffice; in others as much as twenty, thirty, and even forty c.c. are required. That the favorable results which we secure by the epidural method are not purely suggestive ones, due to an intense physical influence, I have convinced myself by the rapid improvement exhibited in incontinence of insane persons who are not aware of their ailment nor of the method or its purpose. It is further proven by the good results which I have secured by the epidural injections in sexual debility, spermatorrhea and excessive night emissions, in stubborn cases of sciatica and lumbago, in short in all conditions in which an inhibitory effect on the sensory fibers was desirable.

6. The incontinence of urethral origin in women is chiefly caused by defects or by insufficiency. It appears mostly in older women near the

menopause and oftentimes is found associated with a cystocele. The patients when on their feet lose on laughing or coughing or other physical exertions, a few drops or more of urine emanating from the urethra. The condition is very annoying but yields promptly to surgical measures. In some cases the operation on the cystocele is sufficient, in others the urethro-vesical sphincter has become degenerated to such a degree that special steps are necessary. Gersuny's method of twisting the urethra around its own axis to 180 degrees is fairly successful. After twisting, the urethral mucosa presents a folded appearance from one end to the other, and the canal has the shape of two funnels which are touching each other end to end.

Better results and by a more simple procedure are to be obtained by paraffin injections directed towards the vesical neck.

Paraffin or vaselin injections are made through the vaginal wall in different places around the vesical sphincter. In order to avoid injuring the latter with the tip of the injection needle, and also to properly deposit the mass, the index finger, or a metal sound, is inserted into the urethra. Accidents due to injecting into a vein can be avoided by watching the cap of the needle after the latter is placed in the tissues. If blood escapes from the needle its position must be changed before the syringe is attached and the mass injected. Not more than one-half to one cubic centimeter should be used for this purpose.

I also have been able to cure some cases of this group which were due to relaxation of the urethral sphincter by a few epidural injections with physiologic salt solution.

CARL SPENGLER'S "I. K." TREATMENT*

CLARENCE W. LEIGH, M.D.

Professor of Tuberculous Diseases, Illinois Postgraduate Medical School; Chief of Attending Staff, Cook County Tuberculosis Hospital.

CHICAGO

In a paper published by Carl Spengler in the *Deutsche Medizinische Wochenschrift*, September, 1908, he claims to have shown that the blood serum is not the principal seat of tuberculosis-immune substances of human beings or animals artificially immunized against tuberculosis, or of auto-immunized human beings. On the contrary, according to his researches, it is in the red blood-cells that these immune substances are chiefly produced and accumulated. Indeed, they may often be found in quantities a millionfold greater than in the serum. He insists that when found in the serum they are derived from the erythrocytes, and their presence there is due to antigent influences of a certain strength and through hemolysis. Furthermore, in previously immunized tubercular patients, within half an hour after injecting subcutaneously an antigent there may be observed an increase in the quantity of immune substances in the serum and a decrease of the same in the erythrocytes. There is

* Brief review of Immunekörper ("I. K.") theory. We quote liberally, and in some instances literally, from both Spengler and his assistant, Benöhr.

a return after a few days to the usual number of erythrocytes or they are more abundantly supplied. The quantities of serum are probably absorbed or used up by the leukocytes and blood discs which do not appear to be independent producers of these bodies. That the red blood corpuscles are responsible for the production of tuberculosis-immune bodies Spengler claims to have shown in many trials made on healthy animals. He says they are formed, and can be demonstrated, in the erythrocytes within a few minutes after injecting tubercular poison.

He summarizes the results of his experiments as follows:

The blood-serum of immunized human beings and animals agglutinates Koch's testing fluid (1:10,000), but rarely above 1:1,000. The precipitations, likewise, are seldom higher (filtered testing fluid). The dissolved red blood-cells, however, agglutinate and precipitate without exception above 1:10,000. In the case of highly immunized human beings and animals, both reactions go as far as 1:10 and 1:100 millions, the most distinct agglutination frequently beyond this figure even when the serum does not exceed the tituration of 1:1000. The auto-precipitations never rise so high. Agglutination and precipitation do not run quite parallel, although there exists a certain relation.

Quite analagous are the conditions in the case of the leukocytes and the blood-disks. The agglutinative power, however, is considerably stronger than the precipitative function. The lysins and antitoxins—not the agglutinins and precipitations—are the main immune substances contained in tuberculosis-immune blood, and constituting its therapeutic and immunizatory value.

They are likewise present in the cells in far larger quantities than in the serum.

The lysins possess the power of loosening the sheath of the bacteria in order to lay open and destroy the living protoplasms. In the course of these lytic experiments the interesting and important fact has been manifested that the lytic action follows the law of dissociation. The concentrated lysins display a slight lytic action, the high ones, under certain circumstances, even millionfold dilutions, a pronounced lytic action. A similar though not exactly corresponding action is shown by the antitoxins. It is certain that the antitoxic action likewise does not follow the laws of equivalence. The best of the antitoxic effects approximates to the best of the lytic ones and moves in high grade varieties of immune blood between the thousand millionfold and hundred thousandfold dilution of the immune substances of the blood.

It is also said, that by means of microscopic preparations, one can demonstrate the lytic action of immune blood solution. Glass plates are painted with moist tubercle cultures, and before entirely dry, a drop of immune blood solution, neutral or slightly acid in reaction, in the dilutions of 1 to 100 or 1 to 1,000 up to 1 to 1,000 millions is added, the preparation dried in the incubator for five minutes, then stained and examined, using control preparations. The sheaths of the bacilli are dissolved and there remain only masses of red, waxy, shapeless spots; normal bacilli are rarely present.

This preparation of tuberculosis-immune blood, extracted from the red blood-cells of immunized sheep or rabbits, and designated by Spengler *Immunekörper* ("I. K.") he states, is chemically pure, free from albumin and hemoglobin which produce disagrreable by-effects, and contains one million lytic and antitoxic units in each cubic centimeter.

ACTION OF "I. K."

Having, therefore, a serum which contains both antitoxins and lysins, we should expect as a result of its administration the following:

1. An antitoxic, direct poison fixing, and antifebrile action. In other words, the disappearance of toxic phenomena such as fever, night sweats, nervousness, sleeplessness, etc.

2. A bacteriolytic action. The lytic elements of "I. K." attack the capsule, dissolve it, and destroy the body within. This action, it is said, seems to run counter to and sometimes masks the antitoxic action, and causes what Spengler terms reaction or destroying fever. He states this is caused by the destruction of large numbers of virulent bacilli, which in turn liberate poison in excess of the immediate and complete antitoxic or poison fixing power of the serum. However, indirectly, by impairing the vitality of the bacteria the fever is eventually lowered.

According to Spengler, there is an improvement in general conditions; better appetite, rapid increase in weight, lowering of temperature, if it has not existed for too long a period, disappearance of rhonci and sputum during the first few weeks of treatment, and most remarkable of all, frequently, after eight to fourteen days' treatment, only a few isolated bacilli are found even when at first they were present in large numbers. However, the fever in very severe hectic cases may persist for a long time, and one should not be discouraged but continue the injections. On the other hand, the fever disappears rapidly in some of these cases which otherwise would be considered hopeless. Even in cases where there is cavitation, and rigid pus-producing walls, one need not necessarily despair.

Furthermore, Spengler claims "I. K." is valuable as a diagnostic agent in latent forms of tuberculosis by causing reaction at the seat of lesion. In tuberculous glands, joints, secondarily infected tonsils, etc., irritative swellings occur which later subside and are said to be due to lytic reaction. Tonsillary and diarrhea reaction are frequently observed; also pulmonary, with increase in amount of sputum, which subsequently decreases. Local reaction at point of injection results sometimes. He further remarks, "it is not always possible to decide at once whether the reaction of an organ is caused by a tubercular, mixed, or pus infection, seeing that 'I. K.' is polyvalent and contains also immune substances against suppuration bacteria, and may, therefore, be used also in septic states."

He insists that "I. K." in itself is perfectly indifferent and innocuous, the treatment simple and safe. Providing the myocardial power is maintained long enough to permit large doses being given for some time, it may be used even in the severest cases of phthisis.

OTHER TREATMENT IN CONJUNCTION WITH "I. K."

It is absolutely essential to bear in mind that each patient is a law unto himself, and that individualization in the treatment of the disease is the keynote to success. Having this in mind one naturally takes advantage of any therapeutic, dietetic, or hygienic measure that will contribute toward recovery. If there is a myocardial or toxic heart, digitalis, in

some form, either *per os* or subcutaneously, is advised and should be instituted simultaneously with the injections. Blood or albumin iodatum preparations are also advised as tonics.

The frequency with which lues, either acquired or hereditary, and tuberculosis are associated has probably not received the attention it deserves, especially in recent years.

Benöhr, Spengler's assistant, calls attention to the subject and regards it of great importance. He also cites among others who have observed the frequent coincidence of these two diseases, von Schnitzler, Fournier, Senator and Kobert. More recently S. Klein claims to have noted it in 41 per cent. of a large number of cases treated. Spengler, after years of observation, is convinced that a great number of tubercular cases develop from hereditary lues. In other words, the organism is so damaged and injured by the toxins of lues that it is predisposed to tuberculosis. Benöhr states that the clinical experience of tuberculosis therapy of long years' standing actually forces us to assume the frequent presence of syphilis of the lungs, even if it is difficult to show the proof on the dissecting table. The syphilitic lung is generally the "fleshy," hypertrophic lung, especially if the disease is hereditary. If the process has existed for a long time cirrhosis may be combined with this condition and is analogous to cirrhosis of the liver with fibrous induration. A characteristic auscultatory phenomenon observed over the "fleshy" lung is the "Rauschen," or rustling sound, described by Spengler, which conforms to the general syphilitic focus, and is found more frequently over the middle and lower than the upper lobes. It is interposed, i. e., it appears in the last phase of inspiration, and extends over the beginning of expiration. The diagnosis of tuberculosis, combined with syphilis, is made less difficult by observing the following points:

1. The disease is frequently found primarily in the larynx.

2. The bronchi are usually extensively involved, especially in acquired lues, and may be recognized by bronchial symptoms and sometimes by snoring or rattling sounds.

3. There may be extensive involvement of the lungs and the patient appear to be well nourished and in good physical condition.

4. The quantity of sputum is large but contains few tubercle bacilli, even in advanced stages, although there are numerous flat, foggy nuclei which would otherwise be clear and sharp.

In these cases, in addition to "I. K.," iodin is strongly recommended and may be given in hot milk, in doses of 5 to 10 drops (children 1 drop) daily. Sometimes astonishing improvement is shown from its administration in patients in whom a luetic taint cannot be legitimately suspected or proved. However, the result will depend largely on the age of the individual and duration of the disease. During the inflammatory hypertrophic stage, and while the patient is still young, we may expect improvement, while on the other hand, in older individuals, in the stage of cirrhosis, little can be accomplished. Mercury, if used at all, should be in small doses with long interruptions.

OUTDOOR TREATMENT

Very little has been said in this country concerning the empirical and unscientific method of outdoor treatment now in vogue. The indiscriminate exposure of all patients, at all hours, in all seasons, irrespective of outside temperature or humidity conditions should, in our opinion, merit the severest criticism and condemnation. Whether we accept Spengler's views on the specific action of "I. K." or not, we must at least credit him with having formulated rational rules, based on individualization, for the outdoor treatment of his patients at Davos. They are as follows: (1) nonfebrile patients begin their daily outdoor treatment as soon as the lying-out rooms are warmed by the sun or when the temperature outside makes exposure comfortable without the aid of sunshine; (2) if the outside temperature is low, only those who eat well are permitted to remain out for a long time. If food is not taken in sufficient quantities to manufacture calories equal to, or in excess of the amount dissipated by the low temperature, bad results follow prolonged exposure; (3) patients are not permitted to remain outside if they feel cold and uncomfortable; (4) as a rule, after dinner, they are required to remain out of doors, in bed, or exposed to the sun's rays for two hours.

The percentage of hemoglobin is also an index to the amount of outdoor exposure and exercise permitted. If the percentage is low, all exercise is prohibited, and the time outside during very cold weather reduced. Unless this precaution is observed, loss of weight, and a condition of inanition resembling progressive phthisis may result.

REPORTS ON "I. K."

Weintrand and Shaeffer report no decided results. Simon is of the opinion its action is doubtful in mild cases and negative in advanced conditions. Alexander failed to obtain good results in eleven advanced cases and is of the opinion it is capable of doing much harm. Gernsheim declines to endorse it after treating eight cases. Kraft maintains it is capable of doing great injury. Roepke condemns "I. K." and believes it worthless. He states that 270 cases of tuberculosis, in various forms, were selected for experimental purposes and to determine the value of the preparation. He believes he is justified in making the following statements:

1. An antitoxic effect of "I. K." was not seen in either high or low temperature cases, nor was a change or reduction in temperature such as tuberculin produces caused.

2. We failed to see a lytic action or change in the number or character of the bacilli.

3. We found neither a marked curative effect in lung, skin, bone, or glandular tuberculosis, nor the Herd-reaction in localized conditions.

4. Because of our experience, based on the clinical observation of 270 cases which were treated according to Spengler's methods, we feel at liberty to conclude that "I. K." is absolutely indifferent and worthless in the treatment of tuberculosis.

On the other hand, Moritz Wolf recommends "I. K." for incipient cases, especially in children. Selter claims to have seen great improvement in glandular and bone cases among children. Miteluscu treated eighty-three patients, fifty-four of whom were incipient and showed improvement. Schmitt-Weingarten reports the cure of a case of lupus. Pumr treated forty-six cases with the following results: dismissed as cured, eighteen; much improved, eighteen; very little improved, two; not improved, two; three died and three discontinued treatment. These were all ambulatory cases, mostly in the second stage, although some of them were in the first and third stages. They were not selected but treated in the regular order in which they came. Nineteen had fever above 38 C. and twelve below 38 C. Of the entire forty-six cases, thirty-one, or 67 per cent., had fever. Westphal believes "I. K." is an invaluable remedy in tuberculosis if it is injected with lengthy pauses and in slowly advancing doses. Awtokratow states that 102 patients out of a total of 150 gained from 5 to 6 kg. in weight. In fifteen the weight did not change; the others showed a loss of from 1 to 3 kg. Many other reports have been published but are omitted for the reason that they are similar, both pro and con, to those mentioned above.

METHOD OF TREATMENT AND RESULTS

In incipient cases we usually begin with 0.1 or 0.2 c.cm. of the fifth dilution, and increase the dose by 0.1 or 0.2 c.cm. at intervals of eight days. When a dose of 1 c.cm. of a dilution is reached, we proceed to 0.1 or 0.2 c.cm. of the next stronger dilution and so on. However, one can rarely progress in this regular manner to the original solution without provoking lytic symptoms. If tolerated, the maximum dose of the original solution is 1 c.cm., repeated as often as is thought necessary. In some instances it is advisable to go from the original to the initial dose and increase as before. Again, it may be desirable to advance no further than to the fourth, third, or second dilution, as the case may be, and proceed as in the beginning. In other cases the retrograde method may be practiced. Doses are increased as described above and then decreased in the same way to the fifth or seventh dilution.

Another way is to pass rapidly from one dilution to another, increasing the dose tenfold; i. e., one injects each time 0.1 to 0.2 c.cm. of the next stronger concentration. This is the so-called rapid immunization method, and may be used sometimes in incipient and strictly localized, non-complicated cases of thoroughly inactive tuberculosis.

Lytic symptoms are manifested by increase in cough, quantity of sputum, elevation of temperature, sleeplessness, nervousness, lassitude, etc. Should these symptoms occur, and fail to disappear in a few days, a "relieving injection" of 0.1 or 0.2 c.cm. of the seventh or sixth dilution is given. Usually the effect is prompt, especially if it immediately follows high doses. One can only be guided in a general way by instructions in regard to treatment. In order to obtain the best results it is necessary to sharply individualize.

Dietetic and hygienic measures were, of course, always combined with the use of "I. K." A liberal diet of fats and oils, raw eggs, raw milk, and carbohydrates was advised as indicated. Tonics such as iron, quinin and strychnin were habitually prescribed; also digitalis, iodin, etc., as indicated.

Our cases were classified as follows:

Class A. Incipient (?)	8
Class B. Moderately advanced	11
Class C. Advanced or lost	5
Class D. Surgical or localized	6
Total number treated	30

A. Cases with one or both apices involved, cough, with or without sputum. Tubercle bacilli doubtful. Morro test positive.

B. Cases with extensive involvement of one or both lungs. Tubercle bacilli in sputum, marked loss of weight.

C. Cases with extensive involvement, complicated with other lesions.

Class A.—In eight cases, without great lung destruction or severe constitutional disturbances, the disease was apparently arrested, there being no abnormal signs at the present writing.

Class B.—In eleven advanced cases, with great loss of weight and constitutional disturbances, great improvement occurred. Some symptoms are still present, however.

Class C.—Six cases failed to return or continue treatment.

Class D.—In six localized tuberculosis cases, three apparently made a complete recovery: one tuberculous adenitis (suppurative), one tuberculous epididymitis, one tuberculous ulcer of cornea.

One case of Pott's disease is improving, shown by gain in weight and reduction of temperature.

One case of tuberculosis of the bowels, lungs, etc., made a good showing but was irregular in treatment. There is improvement in stools, temperature, weight and strength.

Class A.—Average length of treatment four months. Average gain in weight 13 pounds. Marked decrease in cough and sputum. Temperature approximately normal.

Class B.—Average time of treatment four and one-half months. Evidence of improvement: decrease in cough and quantity of sputum. Gain in weight averaging 11 pounds. Temperature remaining approximately normal.

Class C.—Advanced or lost cases: No. 1 discontinued treatment, no improvement; No. 2 remains about the same; No. 3 has had syphilis, extensive involvement of larynx, and is in advanced stage of tabes dorsalis: discontinued treatment; No. 4 also had as a complication, extensive involvement of the larynx and stopped treatment.

Class D.—Six cases of localized tuberculosis, showing varied improvement. Nos. 1, 2 and 5 are apparently well. Nos. 3 and 4 are improving.

TABLE SHOWING RESULTS OF TREATMENT WITH "I. K." IN OUR HANDS

CLASS A

Patient.	Age.	Duration of Illness.	Weight.	Loss.	Night Sweats.	Temperature.	Pulse.	Respiration.	Cough.	Sputum.	T. B.	Moro.	Duration of Treatment.	Results.	Sweats.	Temperature.	Pulse.	Respiration.	Cough.	Sputum.	Gain in Wght (pounds).
Miss E. L..	28	3 mos.	113	5	X	99.8	90	24	1	1	X	P	4 mos.	Imp....	—	98.6	82	20	D	D	15
Miss F. L..	27	1 yr.	141	6	X	97.4	90	32	1	1	X	P	4 mos.	Imp....	—	98.6	78	20	—	D	15
Mrs. E.	29	1 yr.	118	5	—	99.8	90	24	1	1	—	P	4 mos.	Imp....	—	98.8	92	24	D	D	0
Mr. J. C....	28	6 mos.	150	12	X	99	98	28	1	1	X	P	5 mos.	Imp....	—	98.4	86	28	D	—	14
Mrs. P.	23	1 yr.	165	5	—	97	82	24	1	1	X	P	4 mos.	Imp....	—	98.4	80	24	—	—	4
Mrs. E. I...	21	1 yr.	95	15	X	100	90	24	1	—	X	P	3 mos.	Imp....	—	98.6	80	22	—	—	16
Miss M. A..	30	1 yr.	120	20	—	100	120	28	1	—	X	P	4 mos.	Ap. crd.	—	98.4	82	24	—	—	20
Miss B. C..	25	1 mo.	160	12	—	98.8	100	28	1	—	—	P	4 mos.	Ap. crd.	—	98.6	78	22	—	D	20

CLASS B

Mr. R. M..	41	2 yrs.	115	40	X	103	120	30	3	3	X	P	6 mos.	Imp....	—	98.8	84	25	D	D	13
Mrs. F. B..	26	4 yrs.	104	8	—	98.6	80	24	2	2	X	P	4 mos.	Imp....	—	98.4	88	22	D	D	0
Mrs. M. H..	28	2.5 yrs.	102	10	X	99.4	100	24	2	2	X	P	6 mos.	Imp....	—	99	80	22	D	D	4
Mr. E. L...	48	2 mos.	140	5	X	101	98	28	3	3	X	P	5 mos.	Imp....	—	98.4	92	24	D	D	12
Mr. E. D...	30	1 yr.	146	19	X	103	124	32	2	2	X	P	3 mos.	Imp....	—	98.4	80	24	D	D	8
Mrs. M. R..	34	3 yrs.	98	12	—	99.5	84	24	2	2	X	P	2 mos.	Imp....	—	99	80	24	D	D	3
Mrs. A. D..	25	1 yr.	102	23	X	98.8	118	30	2	2	X	P	3 mos.	Imp....	—	98.4	84	26	D	D	11
Mr. F. A...	29	2 yrs.	140	7	X	99.2	120	22	1	1	—	P	6 mos.	Imp....	—	98.4	80	28	—	—	8.5
Mrs. M. L..	47	3 yrs.	84	9	—	99	84	24	1	1	X	P	5 mos.	Imp....	—	98.2	80	22	D	D	4
Mrs. E. W..	50	5 yrs.	85	35	X	99.2	88	22	2	2	X	P	5 mos.	Imp....	—	98.4	86	28	D	D	36
Mrs. M. C..	61	2 yrs.	109	30	—	100	94	28	2	2	X	P	6 mos.	Imp....	—	99	90	26	D	D	12

CLASS C

Mr. E. G...	48	3 yrs.	124	16	X	101	127	28	2	2	X	X	3 mos.	.....	X	99	120	24	3	3	3
Mr. J. S....	59	20 yrs.	126	5	—	99	110	26	2	2	X	X	3 mos.	.....	—	98.8	108	29	2	2	X
Mr. W. S...	41	10 yrs.	114	40	—	102	100	26	3	3	X	X	1 mo.	.....	..	....	....	..	..	..	..
Mr. E. P...	32	5 yrs.	134	10	—	100	140	28	3	3	X	X	3 mos.	Imp....	—	99.2	92	24	D	D	12
Mr. R. M...	32	1 yr.	153	12	X	99	80	22	2	2	X	X	2 mos.	Imp....	—	98.6	80	22	D	D	12

CLASS D

Miss E. L..	20	2 mos.	123	2	—	98.8	98	24	—	—	—	P	3 mos.	Imp....	Corneal ulcer.
Mr. R. S....	28	2 mos.	123	—	X	98	..	..	..	..	..	P	6 mos.	.....	T. B. epididymis.
Mr. M. B...	7	1 yr.	57	—	X	100	90	24	1	—	—	P	6 mos.	Imp....	T. B. hip joint.
Miss V. S..	20	6 mos.	...	..	..	100	90	28	—	—	—	P	6 mos.	Imp....	T. B. adenitis.
Miss S. B..	15	7 mos.	120	..	..	...	..	..	..	..	X	P	.....	Imp....	T. B. gland (sup.).
Mrs. G. P..	34	2 yrs.	107	3	—	98.4	84	—	X	—	P	P	6 mos.	.....	T. B. bowels (in stools, urine, suptum).

Signs and abbreviations: X means present; —, absent; D, decreased.

No. 6, while receiving injections, shows a decided improvement but does not receive treatment regularly.

Most of our patients showed rapid changes following the first few injections of "I. K." These changes are noted in the improved general attitude, in an increase in appetite, strength, weight, breathing, decrease in cough in most instances, and quantity of sputum. Of our patients, 75 per cent. were at work constantly; some could neither afford proper food nor live in the proper environment. There was a history of syphilis in five, or 16 per cent. of our cases. Tubercle bacilli were found in the feces of four, or 13 per cent.

In some cases there was evidence of a so-called negative phase. Reactions, or intense lytic symptoms, should, if possible, be avoided. We believe great harm can result from careless or improper use of this preparation. The same caution should be observed in the use of "I. K." as is exercised in the administration of tuberculin.

In conclusion, we would say that from our experience, irrespective of what the final results may be in our cases, we believe "I. K.," if properly used, is a valuable remedy in the treatment of tuberculosis.

LITERATURE ON "I. K." OF DR. CARL SPENGLER

Spengler: Deutsch. med. Wchnschr., 1908, No. 38.
Rudloff: Ztschr. f. Medicinalbeamte, 1908, No. 23.
Herzberg: Münch. med. Wchnschr., 1909, No. 5.
Hollos: Budapesti Orvosi Ujsag, 1909, No. 18.
Bergeron: La Presse Med., 1909, No. 32.
Wolff: Münch. med. Wchnschr., April, 1909, No. 15.
Koch: Ztschr. f. Tuberkulos., 1909, Bd. 14, Hft. 4.
Mitulescu: Berl. klin. Wchnschr., 1909, No. 33.
Selter, Gernsheim, Weintraud: Deutsch. med. Wchnschr., 1909, No. 20, p. 910. Sitzungsbericht Kinderarzte-Wiesbaden.
Simon: Ztschr. f. Tuberkulos., 1909, Bd. 15, Hft. 1.
Landmann: Berl. klin. Wchnschr., 1908, No. 45.
Landmann: Int. Centr. Bl. f. d. ges. Tuberkulos. Forsch., 1909, No. 8.
Ruppel: Ber. d. Deutsch. Pharm. Ges., 1909, No. 2.
Schröder: Ztschr. f. Tuberkulos., 1909, Bd. 14, Hft. 6.
Hollos: Wien. klin. Wchnschr., 1909, No. 38, p. 1322.
Baumann: Beitr. zur Klinik d. Tuberkulos., Bd. 14, Hft. 1, f. 75.
Roepke: Deutsch. med. Wchnschr., 1909, No. 42.
Bandelier-Weicker: Deutsch. med. Wchnschr., 1909, No. 42.
Fuchs-Wolfring: Beitr. zur Klinik d. Tuberkulos., Bd. 14, Hft. 2.
Alexander: Beitr. zur. Klinik d. Tuberkulos., Bd. 14, Hft. 2.
Kirschenblatt: Vortrag gehalten in der Kais. Kauk. med. Ges., 1909, i, 1.
Piradow: Russ. Tageszeit, "Kawkas," Okt., 1909, No. 227.
Dresdner: Münch. med. Wchnschr., 1909, No. 52.
Schaefer: Münch. med. Wchnschr., 1909, No. 46.
Kirschenblatt: Ztschr. f. Tuberkulos., 1909, Bd. 15, Hft. 3.
Kraft: Münch. med. Wchnschr., 1909, No. 47.
Spengler: Deutsch. med. Wchnschr., 1909, No. 49.
Autokratow: Wratschebnaja Gaseta, 1909, Nos. 49-50.
Renaux: Jour. Med. de Bruxelles, 1909, No. 50.
Roth: Münch. med. Wchnschr., 1910, No. 6.
Clarus: Beitr. zur Klinik d. Tuberkulos., 1910, Bd. 15, Hft. 2.
Schroeder: Ztschr. f. Tuberkulos., 1910, Bd. 15, Hft. 5.
Mannilow and Lapochin: Internisten-Congress, Moskau, Wien. klin. Wchnschr., 1910, No. 12, p. 456.
Brauer und Gekler: Beitr. z. Klinik. d. Tuberkulos., 1909, Bd. 14, Hft. 4.
Wallerstein: Wien. klin. Wchnschr., 1910, No. 15, p. 568.
Wallerstein: Berl. klin. Wchnschr., 1910, No. 14.
Kerle: Berl. klin. Wchnschr., 1910, No. 14.
Diuski: Beitr. z. Klin. d. Tub., 1910, Bd. 16, Hft. 2.
Weihrauch: Beitr. z. Klin. d. Tub., 1910, Bd. 16, Hft. 2.
Koile: Jahresber., Deutsch. Heilst. f. Lungenkr. Davos.
Meissen: Ztschr. für arzelich, Fortbildung, Mai, 1910, No. 10, vol. xv.
Schaefer: Ztschr. f. Tuberkulos., 1910, Bd. 16, Hft. 1.
Aravancinos: Beitr. zur Klinik d. Tuberkulos., 1910, Bd. 16, Hft. 3.

Benöhr, Benöhr-Hoffmann, Pumr, Westphal: Beitr. zur Klinik der Tuberkulos, 1910, Bd. 16, Hft. 4.
Gantz: Wien. klin. Wchnschr., Juli, 1910, No. 28, vol. xiv.
Simon: Ztschr. für Tuberkulos., 1910, Bd. 16, Hft. 2.
Exner and Lenk: Centralbl. für Chir., 1910, No. 30.
Bandelier and Roepke: Lehrbuch der Spezifischen Diagnostik und Therapie der Tuberkulose.

THE PREVENTION OF HEMORRHAGE IN PULMONARY TUBERCULOSIS BY THE ADMINISTRATION OF AUTOGENOUS VACCINES; SECOND REPORT*

ROSWELL T. PETTIT, S.B.
Fellow in Pathology, University of Chicago; Bacteriologist, Ottawa Tent Colony
OTTAWA, ILL.

In a report published in the *Journal A. M. A.*, Dec. 24, 1910, I compared the percentage of hemorrhage in twenty-one cases receiving autogenous vaccines with the percentage of hemorrhage occurring in sixty cases under exactly the same conditions not receiving vaccines. It was found that the percentage of hemorrhage in cases receiving vaccines was 4.8 per cent. while in the group not receiving vaccines the percentage of hemorrhage was 15 per cent., three times as great. The conditions of housing, exercise, diet, medical supervision, climate, season, etc., were exactly the same in both groups. The suggestion was made that hemorrhage, being due to the weakening of the blood-vessels resulting from tissue dissolution, and tissue dissolution being very likely due to the action of pyogenic organisms, the antibody production due to the administration of autogenous vaccines may have been sufficient to inhibit the further invasion of these organisms and thus to have prevented hemorrhage. Since this report was written, March 1, 1910, thirty-five more cases have been treated with autogenous vaccines at the Ottawa Tent Colony and the comparative absence of hemorrhage in this group is as marked as in the group reported on.

The majority of hemorrhages from the lungs are due to tuberculosis. Stricker found 221 of 480 hemorrhages were due to tuberculosis and in 196 more this was probably the cause. See[1] says: "Aside from infectious diseases, hemophilia, and acute infections of the lungs (pneumonia, abscess, gangrene) we only know of two real causes of hemoptysis—heart disease and pulmonary tuberculosis."

The pathologic conditions preceding hemorrhage vary with the stage of the disease. In early cases it may be due to localized hyperemia in the lung induced by violent or long continued exercise; or more likely, due to a weakening and erosion of small blood-vessels by the growth of tubercles. The connective tissue of the adventitia is more resistant to dissolution than the surrounding pulmonary tissue, and vessels stand out in the walls of cavities unsupported; on these unsupported vessels aneurysms develop and hemorrhage results with a weakening of the wall of the aneurysm and any slight rise in blood pressure.

* Work done under the Max Pam Research Fund.
1. Kleba: Tuberculosis, ed. 1, New York, 1909. Appleton & Co.

That slight rises in blood pressure have an important bearing on hemorrhage is seen in the effect of over exertion, straining at stool, premenstrual congestion, overfeeding, excitement, worry, temper, etc., on this condition. Heredity, age, and sex are factors of minor importance in the production of hemorrhage in pulmonary tuberculosis. The season of the year is a comparatively important factor; hemorrhages being usually most frequent during the hot spells in the summer, but epidemics of hemorrhages have occurred at other periods of the year, frequently in the winter and spring. These, I believe, are due to epidemics of "colds," influenza, etc.

The influence of mixed infection on hemorrhage is not given by any of the authors I have consulted, but Flick concludes from the bacteriologic studies made by Ravenel,[2] Irwin and himself that the pneumococcus is an important agent in the production of hemorrhage. The data presented do not justify the conclusions drawn. The influence which secondary infection may exert on the pathologic changes occurring in pulmonary tuberculosis is by no means definitely known. Examination of the sputum[3] reveals but little in a majority of cases because so many of the secondary organisms found in the sputum are found under normal conditions living saprophytically on the mucous membranes in various parts of the respiratory tract. Post-mortem bacteriologic and histologic examination of the lung yields but little; terminal, agonal and post-mortem invasion are such important factors. Up to the present organisms of secondary infection have been found in the blood during life in only a few far advanced cases. Panichi[4] got four positive results out of some thirty-five cases examined. The results of most other investigators (Jochman,[5] Benöhr,[6] and Reiche[7]), were almost entirely negative. During the past year I have made blood cultures during life on 100 cases of pulmonary tuberculosis representing all stages of the disease. By drawing a comparatively large quantity of blood and using a careful technic in cultivation I have been able to isolate definite strains of streptococci and pneumococci in 35 per cent. of the cases examined. This, I believe, proves that mixed infection is a very important factor in pulmonary tuberculosis. The results of these studies will be published in a separate report. Mixed infection is undoubtedly an important factor in pulmonary tuberculosis and the pyogenic cocci cause more tissue destruction than the tubercle bacillus in a majority of cases.[8] Is it not possible that through this tissue destruction they cause hemorrhage and that by checking their invasion by the administration of autogenous vaccines hemorrhage is prevented? Weaver[9] has shown that injections of killed streptococci protect rabbits against subsequent injections of large numbers of

2. Ravenel and Irwin: Phipps Inst. Rep., 1906, 111, 229; iv. 392.
3. Laird, A. T.: New York State Journal of Med., viii, 576.
4. Panichi: Berl. klin. Wchnschr., 1908, No. 41, 1840.
5. Jochmann, G.: Deutsche. Arch. f. klin. Med., 1905, xxxiii, 558.
6. Benöhr, R.: Mitt. a. d. Hamburg Staatskrankenanst, 1908, viii, 323.
7. Reiche, T.: Med. Klinik., Berlin, 1909, v, 1962.
8. Prudden, T. M.: New York Med. Jour., 1894, lx, 1411.
9. Weaver, G.: Jour. Infect. Dis., 1908, v, 589.

living virulent streptococci. The work of Wright[10] and others has shown that injections of killed and attenuated bacteria have a protective effect against subsequent infection. Abundant proof of the efficacy of active immunization is furnished by Pasteur's inoculations in chicken cholera, anthrax and hydrophobia, Jennerian vaccination and antityphoid inoculation. The data on protective inoculations against pyogenic infections are very meager, but the results that have been obtained in therapeutic inoculations against the gonococcus, streptococcus, staphylococcus, pneumococcus, etc., especially in chronic, subacute, and localized infections, seem to show that injections of killed organisms hasten recovery and protect against relapse. Webb[1] has used killed organisms against mixed infection in tuberculosis and has observed a protection in inoculated cases against influenza. Five patients inoculated against influenza with their own organisms, and eight inoculated against influenza with stock vaccines, all giving histories of repeated former attacks, escaped the epidemic. Preventive inoculations were not given in thirty-two cases, the patients denying that they ever had influenza, and fifteen succumbed to an influenza epidemic.

Since June 15, 1909, I have administered autogenous vaccines in eighty-four cases of pulmonary tuberculosis at the Ottawa Tent Colony. Of these eighty-four cases fifty-six were under observation two months or longer. Patients not under observation at least two months are not included in this report. It has been observed that during the past nineteen months, June 15, 1909, to Jan. 15, 1911, hemorrhages have been less frequent than before. The class of patients, diet, exercise, sleeping conditions, supervision, etc., were practically the same as in preceding years; the only new factor introduced into the treatment was the administration of autogenous vaccines. It has occurred to me that possibly the injection of vaccines against the organisms of mixed infection had a protective action against tissue dissolution and hence against hemorrhage. In all cases considered in the class receiving vaccines at least three doses of vaccine were administered.

In thirty-two cases vaccines were made from organisms isolated from the sputum. In twenty-two cases vaccines were made from organisms isolated from the blood stream. The whole group of fifty-four cases is compared with the group not receiving vaccines and the cases receiving vaccines made from organisms isolated from the sputum and blood are considered separately. The results are tabulated as follows:

TABLE 1.—HEMORRHAGES BETWEEN JUNE 15, 1908, AND JAN. 15, 1911. PATIENTS NOT RECEIVING VACCINES

	No. Cases.	Hemorrhages.	Per cent. Hemorrhages.
Incipient	66	..	..
Advanced	131	31	15%
Far advanced	10	..	..
Total	231		

10. Wright, A. E.: Studies in Immunization, ed. 1, London, 1909; Constable, etc.

TABLE 2.—HEMORRHAGES BETWEEN JUNE 15, 1909, AND JAN. 15, 1911. PATIENTS RECEIVING VACCINES MADE FROM ORGANISMS ISOLATED FROM SPUTUM OR BLOOD

No. Cases.		Hemorrhages.	Per cent. Hemorrhages.
Incipient	6	..	..
Advanced	42	3	5.5%
Far advanced	6	..	..
Total	54		

TABLE 3.—HEMORRHAGES BETWEEN JUNE 15, 1909, AND JAN. 15, 1911. PATIENTS RECEIVING VACCINES MADE FROM ORGANISMS ISOLATED FROM THE SPUTUM

No. Cases.		Hemorrhages.	Per cent. Hemorrhages.
Incipient	2	..	..
Advanced	25	1	3.1%
Far advanced	5	..	..
Total	32		

TABLE 4.—HEMORRHAGES BETWEEN JUNE 15, 1909, AND JAN. 15, 1911. PATIENTS RECEIVING VACCINES MADE FROM ORGANISMS ISOLATED FROM THE BLOOD

No. Cases.		Hemorrhages.	Per cent. Hemorrhages.
Incipient	3	..	..
Advanced	16	2	9%
Far advanced	3	..	..
Total	22		

TABLE 5.—RESULTS IN CASES SHOWING DISTINCT HEMORRHAGIC HISTORY PATIENTS NOT RECEIVING VACCINES

No. showing Hemorrhagic History.	Hemorrhages while in Institution (3 to 5 months).	Per cent. Hemorrhage.
8	3	37.5%

TABLE 6.—RESULTS IN CASES SHOWING DISTINCT HEMORRHAGIC HISTORY. PATIENTS RECEIVING VACCINES

No. showing Hemorrhagic History.	No. Having Hemorrhages in Institution after Vaccine was begun (3 to 5 months).	Per cent. Hemorrhage.
11	1	9.1%

From these tables it is seen that the percentage of hemorrhage in cases receiving vaccines is approximately one-third of that in cases not receiving vaccines. It is also seen that the percentage of hemorrhage in cases treated with vaccines made from organisms isolated from the sputum is very much lower than it is in cases treated with vaccines made from organisms isolated from the blood. The results shown in cases showing hemorrhagic tendencies are very suggestive of the protective effect of the vaccines. In two cases not included in the above tables the preventive action of the vaccines is shown.

Case 1. Advanced. Active. Two severe hemorrhages Jan. 28 and Jan. 29, 1910. Vaccine February 7 to June 27 in biweekly doses. No further hemorrhage.

Case 2. Far advanced. Active. Three hemorrhages before entering institution. One Sept. 16, 1910, and one Oct. 7, 1910. Vaccine begun October 8 and given in biweekly doses until Jan. 6, 1911. No further hemorrhage.

CONCLUSIONS

While it is not admissible to draw definite conclusions from a study of fifty-six cases, the results are indicative, confirm the suggestion drawn from a study of twenty-one cases and I believe, will justify the administration of autogenous vaccines in a large number of cases as a protective measure in the same way typhoid inoculations are used in the prevention of typhoid fever.

I wish to thank Miss Elizabeth Byrne and Dr. A. M. Calvert for assistance in carrying out this work.

REVIEW OF THE WORK OF J. W. VAUGHAN, WITH A REPORT OF TWO CASES TREATED WITH THE VAUGHAN CANCER RESIDUE

FLORENCE L. EVANS, M.D.
EAST ST. LOUIS, ILL.

Carcinomatous growths have been recognized since the time of Hippocrates and although prior to the perfecting of the microscope their classification was not on any definite basis yet their rampant growth, attended as it is with almost inevitable destruction of life, has been known and studied.

Numerous theories as to the cause of these neoplasms have been advanced with the hope that, the cause being demonstrated, a cure might soon be effected.

In 1838 Müller published the first important work on "The Cellular Nature of Cancer and Other Neoplasms." In 1858 Virchow elaborated on this theory and promulgated his well known aphorism *"Omnis Cellula e Cellula."* Cohnheim propounded a modification of this idea in that he stated that, "the only cells capable of producing tumors are those which, produced in excess during intrauterine life, lie dormant until some irritating power, either chemical or physical, causes them to multiply to a marked degree thus forming an embryonic new growth late in life." This theory explains the origin of many of these tumors but falls short when applied to others.

The adherents of the parasitic theory of the pathogenesis of cancer feel that ultimately it will prove to be of infective origin, which infection is due to a micro-parasite which selects an epithelial cell. While numerous micro-organisms have been demonstrated at various times to be fairly constant in these growths, yet many expert workers along this line contend that they are a result and not a cause, that micro-organisms invading the body find these neoplasms a favorable nidus for growth and consequently terminal infections occur.

Dr. J. W. Vaughan in a paper read before the Detroit Academy of Medicine, entitled "Some Modern Ideas of Cancer," says, "observation of pathologic changes caused by parasitical invasions teaches us that the first change is always one of local tissue destruction. Such is not the

case with cancer. The first positive sign of an epithelioma, for instance, is a loss of the distinct limiting border between the epithelial cells and the connective tissue beneath. In other words when the pathologist tells us, this may or may not be cancer, it is suspicious, the section he has examined shows in no instance cellular destruction, but simply an increase in the number of cells in that locality, with a probable loss of limiting membrane."

Ehrlich contended that cellular activity was in all probability due to definite chemical changes which for some reason or other take place in the cell itself.

Vaughan offers an explanation of this cellular activity by stating that "the power of reproduction is inherent in the cell itself and varies in different tissues only in degree." He argues that "under normal conditions reproduction and destruction continue in such proportion that the balance is always correct. As this process of reproduction varies with the need it is probable that it is dependent, at least to some extent, on outside influences." Reasoning by analogy from the lower forms of life in which this property of reproduction is inherent in the cell itself, he assumes that, "each cell possessess a definite chemical ferment which controls its power of division and reproduction." As this power is not active at all times he asserts that "in all probability this reproductive element is stored within the cell as a zymogen which is changed to an active ferment when more cells are demanded, this being dependent probably on some form or irritation mechanical, chemical or otherwise." He calls attention to the fact that "a low grade of irritation, insufficient to cause cellular death, is a frequent factor in the growth of a cancer and he assumes that in a condition of malignancy no pre-enzyme state exists in these cells, but that the active ferment is always present, so that this predominates and the total function of the cell is now one of reproduction only, its whole nature is changed, it is a true autogenous parasite."

In a later paper by the same author he says, "The occurrence of a few cases of spontaneous recovery together with the knowledge that most malignant tumors have so-called periods of quiescence, must lead us to believe that the body itself forms the specific ferment for the destruction of malignant cells."

Experiment teaches us that a rabbit can be so sensitized to the blood of a guinea pig that a sufficiently large second dose will kill the rabbit. We know now that great care must be exercised in giving diphtheria antitoxin after an interval of two weeks has elapsed since the injection of the initial dose, as the patient is sensitized to horse serum." In dealing with the process of sensitization in cancer Dr. Vaughan says "a slightly different problem confronts us and the fact that the body cannot be sensitized to its own body cells must be taken into consideration; again, cancer cells are altered normal cells; hence might be classed as foreign proteid. What comprises the process of sensitization? If a small amount of egg albumin is injected under the skin, chemical changes must occur in the cells that cause the removal of this substance so that it may be

split up and combined with them. After this the body fluids, either in cellular or serum elements, possess a new ferment which is capable of splitting up a second dose of egg white in a short time. A new enzyme is present which is destructive for this function alone. If we regard cancer cells as altered normal cells or practically as foreign proteid, we can readily see that, in splitting up the cancer cell a new enzyme is formed, a specific ferment, which is capable of taking care, in some cases, of all cancer cells present, and in these we have our retrogressions or spontaneous cures." In cases wherein sufficient ferment is apparently not present the author attempts to increase the amount by subcutaneous injections of non toxic cancer residue in the hope that as the body cells take up this foreign proteid sufficient ferment will be formed to split up all cancer cells present.

Such in brief is the work of Dr. Vaughan and in making a plea for the use of this residue the doctor urges that in no way does this argue against radical surgical procedure in all cases wherein this is possible or expedient, but as an adjunct to operative procedure, as a therapeutic agent in cases of recurrence or in those which when first seen are inoperable, he begs for it a trial.

My experience with the cancer residue prepared after the manner of Vaughan has been limited to two cases and in accordance with your request I shall report them in detail.

CASE 1.—Mrs. F., aged 56 years, has three children. Family history negative. Fourteen years previous to our seeing her had been operated on for cancer of the breast. There was no local recurrence. In February, 1910, noted presence of bloody vaginal discharge; there was some slight distress in lower pelvis but no marked pain. Trouble increased continually and we first saw the case about June 7, 1910. Examination of cervix showed entire left side of os covered with a malignant ulcerating growth which bled easily and was painful. Uterus was fixed; there was dense infiltration of posterior wall; sacral and lumbar glands were involved. The growth was too extensive for radical removal. Frozen sections showed it to be a squamous celled carcinoma of the cervix. On June 11 curettage was done followed by a thorough application of the actual cautery as advocated and practiced by Gross the elder. Later a 1 per cent. autogenous residue prepared after the method of Vaughan was injected. Although she had been suffering intense pain for some time it was to a marked degree alleviated after the first injection although it was never entirely eradicated in this case. Injections of the residue were given about every fourth to sixth day, being controlled by a differential blood count. In an effort to determine in what part of the blood the specific ferment which splits up the cancer cell is formed, whether in cell or serum, daily differential counts were made in about twenty-five cases under treatment by Dr. Vaughan and careful records kept. The results were altogether too uniform to be merely accidental. During the first twenty-four to forty-eight hours a relative increase takes place in the polynuclear cells; following this we have a gradual decrease in these cells with a corresponding increase in the large lymphocytes, which take on numerous vagaries of size and shape. This in turn is followed by a second increase or rather a return to normal of the polynuclear cells and a relative decrease of the mononuclears. This blood count is used as an index for treatment and injections are given during the reascending scale of the polynuclears. In this case the highest percentage of polynuclears was 90, the lowest 60. Highest percentage of large lymphocytes was 22, lowest 7. Ten days after the initial dose of residue profuse hemorrhage occurred; controlled by packing. Examination of the cervix at this time showed clean granulating

surface. Throughout July patient felt much stronger in every way, appetite improved, very little discharge from growth. Aug. 1, uterus again cauterized. Evidence of growth in all directions. Sepsis at this time was marked, temperature frequently reached 103 and 105. Recto-uterine fistula present. Pain increased. Emaciation extreme. Abdominal distress, anorexia and indigestion constant. Death occurred September 3, following a severe hemorrhage. This case because of its rapid growth and evident metastasis of the liver from the mammary cancer fourteen years previous, was a discouraging one to treat, yet even in this case rapid although temporary improvement followed the use of the cancer residue. We know that pain was held in abeyance although not checked entirely and many days were spent by her in comfort. I have not been able to learn anything definite in regard to the pathology of the breast tumor, except that it was a hard cancer. Whether there existed any connection between it and the uterine growth I can not say. Gross reports that in 5.2 per cent. of his breast cases the uterus was involved later. Clinical symptoms showed evident liver metastasis and her digestive disturbances had been marked for several years prior to the uterine involvement.

Case 2.—Mrs. D., aged 33 years. Family history negative. Previous health good. No T. B. In 1905 first noticed small tumor in lower outer quadrant of right breast. We first saw patient in September, 1909. Tumor mass about 1½ by 2½ inches; dense, adherent, with occasional lancinating pain. Axillary glands palpably enlarged. Radical operation after Jackson done Oct. 10, 1909. Recovery uneventful. Microscopic examination of the tumor showed increased connective tissue stroma interspaces filled with irregular masses of epithelial cells, many of which were undergoing mitosis. All glands removed were involved and the larger ones were composed almost wholly of cancer cells. In January, 1910, she began to cough persistently. We again saw case May 9, 1910. No evidence of recurrence "in loco" except one small pin-head sized nodule in lower scar. Auscultation of chest disclosed bronchial rales over entire left side, due as we supposed to pressure of enlarged bronchial glands. Was complaining of peculiarity of vision, stating that something seemed to fall down in front of left eye. We referred her to Dr. Adams who made the following report: "Eye reflexes a little slow. Refraction of eye shows three diopters of myopia. Retinal vessels larger than in right eye. Eye ground smooth and uniform. Optic disc normal in appearance. Tension normal, no pain or other symptom of trouble except inability to see well, attended by a sensation of heaviness. Eserin was prescribed and on the following day a condition of hyperopia was found showing the apparent myopia to have been due to muscular adjustment. On the two following visits the visual axis of the eye was still becoming shorter or more far sighted."

Loss of function was rapid and on returning to her home in Chicago was obliged to again consult oculist who advised enucleation of left eye because of rapidly growing tumor in posterior fundus. This was done May 21, and at that time several large nodules were removed from left shoulder and thigh, although three weeks previous a thorough examination failed to detect a single tumor formation. In but a few weeks these nodules appeared in neck, scalp and shoulders; large nodules formed in left breast and all of left axillary glands became involved. Several appeared on anterior surface of abdomen. Dissemination was rapidly wide spread.

Rodman in his excellent monograph on diseases of the breast gives an accurate account of the lymphatic distribution in this region. He divides these vessels into a cutaneous and a glandular group. These he again divides, the cutaneous into a peripheral and central group and the glandular into principal and accessory. The principal chain originates

in the peri-lobular spaces and terminates in a subareolar plexus from which two trunks, an internal and an external, are given off, both of which drain into the axilla. He then describes the accessory channels as four. 1. The inter-mammary, arising from the inner extremity of the mammæ. This perforates the greater pectoral and internal intercostal muscles and empties into the glands of the mammary chain. 2. The sub-clavicular, from the posterior wall to the subclavian glands. 3. The accessory axillary, which passes directly to the axilla. 4. And in this case probably the most important, several small vessels which, arising from the inferior border of the gland, traverse the great pectoral muscle and pass into the thorax through the fourth intercostal space. Some of these branches follow the intercostal vessels to the spine, from thence into the skull. Senn argues that not only is this true, but cancer cells permeate vessels walls and travel in the capillaries until arrested, forming minute emboli, or they adhere to the vessel wall and mural transplantation takes place.

All authors seem to agree that the involvement of the choroid is embolic and this explains the fact that the left eye is more often affected than the right.

Parsons reports that in 1903 he was able to collect thirty-three cases and states that in all about fifty cases have been published. He affirms that they are always secondary, there being no epithelium in the choroid from which a primary epithelial tumor could spring. In twenty-four out of thirty-one cases the primary tumor was in the breast.

Wagner states that rapid local dissemination of the tumor in this location is its principal clinical feature. This patient early in June, 1910, was sent to Dr. Vaughan who prepared for her an autogenous residue. This he injected for several weeks. As her vision gradually diminished he ordered her back to us for further treatment. I made daily differential counts of her blood and in spite of repeated injections of her residue failed to note any variation in her blood count. He was so advised. The right eye was now much involved; cough was incessant; appetite nil; nausea frequent and condition bad in every way. Again Dr. Adams examined her and reported fundus of right eye almost filled with tumor mass springing from the choroid, which had detached retina except at upper inner portion. Tension slightly raised, no pain.

At this time we began using a new residue prepared from a patient with a very malignant breast tumor. Improvement followed; cough became nil; appetite increased; nodules apparently became smaller and she asserts that several have entirely disappeared. Intestinal symptoms have largly subsided; appetite is good; cachexia has not diminished.

One thing we know, these cases of metastatic involvement of the choroid usually grow rapidly and sometimes cause intense pain. Apparently there is but little increase in the size of the tumor. The tension is but slightly raised. There has been absolutely no pain except for twenty minutes in this eye. Occasional pain occurs along the median nerve, in the right arm and in spite of the fact that a two inch nodule occupied the left axillary space and was firmly adherent, when she

returned to us in July there had been no edema of the arm and no impairment of its usefulness.

These reports may seem discouraging, yet when we consider that in both these cases extensive metastasis had taken place long before beginning treatment, I feel encouraged over the results obtained and it seems to me that this method of treatment is justified: in cases of recurrence after operation; in cases which when first seen are inoperable; in cases wherein no hope exists—because it alleviates pain, can do no harm, and may by repeated experiment lead to a fuller, more complete knowledge of the best method of its use. For only by large numbers of case reports, with accurate records, can we hope to solve the problem of "The Effects on Malignant Growths of the Vaughan Cancer Residue."

11½ North Main Street, East St. Louis, Ill.

MYOPIA OF THE MEDICAL PROFESSION

W. R. ALLISON, M.D.
PEORIA, ILL.

The relation of medicine to social and business life is constantly changing, necessitating readjustment from time to time. Labor has organized for protection while capital has combined for protection, and each of them receives medical and surgical care for a fee much less than the customary charges.

The labor unions reduce the number of working hours at increased wages. They elect a physician who contracts to give medical and surgical aid for so much per head. The fee is often a dollar or less per year for each member, with no objection if the women and children are thrown in for good measure. The doctor must make calls night or day, and as often as desired, for $1.00 per year. Many of the fraternal orders have, as their chief attraction, a free doctor any time you want him. Some of these orders are finding medical men willing to do this work for practically nothing. Organized labor will expel its members for working for less than contract price, or outside of working hours.

This does not apply to the doctor's fee or hours. If organized labor is not paid as per contract, there is a strike and tie-up. If a unionist does not pay his physician there is no tie-up in the profession. The laborer is so much ahead and a score of doctors ready to take the place of the unpaid doctor. You can not point to an instance of organized labor breaking their scale because the contractor is poor. If you can not pay the scale there is no work.

The employer has sought protection by insuring the employee against accident, in a company which has a doctor under contract for one-third to one-half the fee customarily charged for such work. The doctor is paid for his first aid only. The employer has now dumped the injured into the care of the surgeon for the price of first aid charged at half the customary price, and is repaid by the insurance company, while the

doctor cannot legally decline further treatment, and must continue to give his services which are gratuitous.

If the patient could pay he would decline because he would say he was insured and let the company pay. So it is safe to say that this class of work is now done for one-third to one-half what it was done for before beef and cabbage were cornered.

I have used these comparisons to show what can be done by organization and to negative the common expression that it would be impossible to get the medical profession together. It has always been a conundrum just why men who boast of intelligence, who pose as leaders of men in society, who are keen students, can not govern themselves as well as the mechanic or common laborer. Suppose I violate the adopted fee table of this society; what is the result? Nothing more than that I have labored for less than I might have received, hurt myself, lowered the profession, and robbed my professional brother.

Suppose a provisional wholesale house of this city would cut the price for a poor widow, with a sick child. What would happen? There is no danger of any thing happening. That is fixed, that is all arranged. If the widow gets provisions she must pay for them or be blacklisted. Suppose the truckster should retail. Do you suppose he could find a market for his produce?

Not so with us. A few days ago a doctor made arrangements to operate for a $45 fee and was underbid by a member of this society, who charged $25. Another member of this society contracted to perform a herniotomy for $100 and deferred the operation until the money was ready, when another member of this society did the work for $50. Have we not the same ability, as much brain and sense as commercial men, for our own interests and protection?

This argument may be met by the claim of charity and refuted by asking who is suffering most, the hungry, the unclothed, or the sick? If to doctors belong the charge of caring for the sick, can you point to an individual so poor as not to have a doctor? What a wail of complaint should we refuse!

Is there any noise made against those who refuse food and clothing and are they censured for not supplying the needy? The daily papers have for weeks been notifying us to pay our coal bills, or we will not get more coal. That's business. Suppose doctors would take a similar stand, would that be business? Is it not true that we have made provision for the needy poor by delegating two of our profession for such emergencies?

Do not for a moment doubt but that there is a business understanding between the retail stores, and there should be. It is essential to a continuous and profitable business. Have you not noted the uniformity of prices? Have you not also noted the steady advance and promptness of collections? Do you realize that doctors are working for less than they were receiving twenty years ago?

Some may deny this; but look it up. Those of us who have seen twenty years of service, know that house rent, office rent, expense of conducting practice, has doubled in twenty years.

If business so intricate as commercial with all its lines can be brought under control and be regulated so as to increase profit in cost of production and sale, what then do you think of the medical business under present conditions? Do you know that we are the only class of business men on the face of the earth which is cutting fees?

What do you think of the livery-man charging more than the doctor for making a call? What do you think of the plumbers of this city who are receiving nine dollars a day and one half-day holiday every week? $263 each month, over $3,000 per year. No night work, no office, no irregular hours. Do you realize that many of us are not making wages as good as this and work seven days a week, subject to call any time day or night! The charity of our profession is abused and misdirected. It is too often of the kind reacting on us, to our harm. You can find no other trade or calling that is trying to lessen its output or destroying its livelihood. I have looked in vain for a nurse from any of our manufacturers telling me how to escape buying their wares. There is no nurse from the grocery organization going about telling the housewife that vegetables are so cheap outside of this city that it does not pay to send them to the market, and if there was such an attempt how long would the grocerymen let such a thing exist?

Now, why should this not be, for if it is right for one class it should be right for all. Let the missionary spirit prevail everywhere, not only a tubercular nurse but a pneumonic nurse, a surgical nurse, a genito-urinary nurse and an obstetrical nurse. Let each of these carry some business cards directing the sick to their favorite physician. Now, when we apply this in its broad sense, it sounds ridiculous; and yet am I not right?

How many mechanics are there in this city out of employment? Try to employ one and they are all busy. This is a great age, a prosperous year. None were more productive than 1910. During this year of great activity in commerce and industry every workman was busy, increasing wages, better business, bigger dinners, better clothes, prosperity unbounded. Compared with this how many idle hours, waiting for patients; how many days have you had this fall when you did not make expenses? If it does not come now when will it come? When may you hope for a change? You are deceiving yourself by thinking a better day will come under the present circumstances. You have been deluded into thinking medicine a great lucrative field. You have been deceived, and yet you tell us you are doing well, busy all the time—getting rich, and yet since the history of this city began, not one doctor has been able to retire as the result of the practice of medicine.

When the prophets first foretold the benefits of united labor, of happy homes and blessings of higher wages, people hung their heads in doubt, but such is the change that the plumber gets better wages by stopping a leak than we do. The weekly wages of the hod carrier for this week is

more coin in his pocket than some of us received. We are twenty years behind in our business methods.

The mechanic has for years been *limiting* the number of *graduates* in his school, by limiting the number of apprentices and increasing the period of time of the apprenticeship, and yet they have received more praise than censure, for doing this. Do we not say the life of the mechanician has vastly improved? Is this not a lesson from which we can learn something?

On the other hand we are increasing the number of graduates, lessening the amount of sickness, and are now reaping our folly. This may seem pessimistic but it's the truth. I am dealing with the business side of life. Suppose it was within our power to foster free dispensaries, free clinics, charity everywhere, until disease became so rare that doctors would have nothing to do. Suppose we killed the goose that laid the golden egg. In other words, who pays us for such laudable charity, who pays us for prophylactic measures? Only the good of knowing you killed your business and mine. That's not the moving spirit, nor the intention of this mode of advertising. It is one method of increasing business and belongs in the same class with bankrupt stocks and selling out at cost. It's a sale of fire goods at wholesale prices, with the middlemen cut out. What's the difference between such methods of conducting business and the quack who treats free? Why does the advertiser give free examination? You know why, and what's the difference between them?

Peddlers, street hawkers, and fire sales interfere with the retail merchants. Free medicine shows interfere with the retail druggist, so that our City Code contains a stiff license fee, meant to be prohibitive and also to help the retailer.

Dispensaries and free clinics only hurt the business of doctors not connected with the show. So dub it with charity, with a chunk of religion, and nobody will see the point until they become a public nuisance, a curse to the profession, which, like an obnoxious weed, can not be killed out, so long as we have such advertisers in our profession.

The press is now giving a friendly ear to our profession. Mystery and ignorance of medicine are giving way to fundamental facts written by able men for the dailies and magazines.

Jealousy and backbiting will change to a united profession. Soon we will be represented in the cabinet of national affairs. United we can teach the people the wisdom of obeying our teachings and granting to us better protection. Then all together we can legislate for our common good. Then we can say to our representatives, when voting on medical subjects (just as organized labor demands anti-election pledges) to vote intelligently and right; to represent the doctor squarely on medical subjects. Then will it be possible to go to our representatives and say: "you voted for obnoxious bills"—just as Gorman and Butts did at the last General Assembly—and are now asking that your and my vote return them, to slap us in the face again. Gentlemen, remember these facts when voting. We have a vote and influence.

The whole trouble in medicine is in our own ranks. From time to time the subject of increased fees has been before us and here it is up again. Some of you are increasing your charges. Some say you are, but are not. Suppose you adopt the fee table as endorsed by this society, and attempt to follow it, and I talk for and urge you to stick to it, and then I quietly take your business by giving cut rates. That very thing is going on in this society. It looks like a scheme whereby those of you who are honorable, wait and hope for a square deal, while I am playing traitor to my own organization. Show me one case of this kind in organized commercial or industrial life. Why should we be the only exception and how can we succeed when the universal verdict of labor and capital is emphatic that it is by combination that hope of success may be had.

When a patient calls a doctor he does not consider who is the cheapest but who is best. The charge is an after consideration for the courts to settle six months or a year after recovery of the sick.

Each of us owes to his brother doctor, if not to himself, the duty of maintaining the dignity of the profession, which can be lowered no more quickly than by being cheap.

If you charge $2 for making an ordinary call, and I take your patient by charging $1.50, you can only get your patient back by charging $1. Then I begin to talk about you and you about me, until we have hurt each other, taught the patient that we are both cheap, spiteful, jealous creatures and they become disgusted with both of us and employ another physician. It is not our charity the sick are calling for. It is our ability to cure.

I have always believed the cheap doctor a conscientious man, and when he underbids me I say each doctor surely knows what his services are worth and if one charges more than the other it is because he thinks the job is worth it.

I believe in advertising and so do you. Some of us advertise one way and some another. We must blow our own horn. I will not blow yours, you will not blow mine; but let's tune up, blow together in unison and make a band with more than a local renown. Stop this discord, blow your part and I mine, blow so that people will applaud, and blow so well that competition will not be in it. Blow so perfectly that the sick will find that medicine has charms to soothe, etc.

Free dispensaries and free treatment sound good to the layman, but no doctor will encourage such unless the advertisement brings some gain. Free treatment is a feeler for reaching the sick. It's the place to increase acquaintance with the afflicted.

In every city where free treatment has been introduced, they are now trying to stop it. The universal desire is for its abolishment. It is to be hoped that the members of this society will see the error of introducing this kind of practice in this city and stop it. It is certainly one of the advertising features that must be discouraged.

Why not introduce free plumbing for the needy poor. Free carpentry where we could get help for the asking. Are not these ludicrous ques-

tions? No more so than that we should give time for nothing. No more demanded than other necessities. Our course is such that our income is gradually lessening. Sanitation and hygiene have greatly lessened disease. Epidemics are a thing of the past. As time goes on the doctor will be in less demand. The sick are made to recover in shorter periods of time than formerly. With progress of time we prescribe less medicine. The layman asks and receives our advice until he can many times dispense with our services; all brought about by ourselves, our free clinics, sanitation and hygiene; and what is there to take the place of this loss, which has come to stay. We are today applying old ideas to new conditions. Twenty years ago not one-half was expected that is now demanded to make a proper diagnosis. There was more sickness than there is to-day, fewer doctors and better fees than there are now.

Here is a patient who has taken to idolatry, to the She God who gave life to the book called "Science and Health." There are those who have displaced bones and nerves and get cured without reduction, all of whom pay larger fees to these prophets of deception than one charged by doctors who endeavor to practice sane medicine.

It is amusing to see the idolatrous teacher charging $2 per call, without training, without knowledge of the normal, much less any knowledge of disease, treating matter which does not exist, and we professors of the true faith asking $1.50. Do you think any of our patients have gone over to these cults because of our charges? Not at all. It's because of our own bickering, because of our lack of attention to small details, because of lack of unity. It's our looseness that leaves a place, when the fickle needs tickling, when the neurasthenic wants coddling. There are three classes: the well, the sick and the intermediate who *thinks* he is sick. We must recognize this division and we have here to awaken to the new condition.

Medicine is largely a one man power. You must represent yourself. We can not increase our output, for there never yet has been a day and night of more than 24 hours. But we can be made to understand that what is good for you is good for me. If you use treachery to get my patient and I get him back by using your methods of getting business, we surely can realize that neither of us can hold this patient so long as either of us has enough baseness to get business. If I am blinded to my own good, help me to see myself, and when enlightened it is reasonable that I will no longer be in error.

I am not advocating a fixed fee table at so much per hour or call. I am trying to see further than organized labor. Let every man have just recompense. Some of us excel others. Your time may be worth more than mine is to me. A calico doctor should be cheaper than a silk doctor. Let each know his worth and let each go beyond the demand of union labor by none being so dishonest as to charge more than he is worth. If I choose to make night calls at day rates, convince me of my error. Help me to reason that I could have had more for my services, and still hold the gratitude of my patient. For my persistent blindness, let me have

as my reward, a life of hard labor, known as a man poorly paid with a dejected family.

I believe in strikes, but not in tying up the profession because my brother was not paid for his labor, but strike in defense of his honor and ability. I will strike for a part of his burden when called by him to do so. I admire the doctor who can take my patient from me because of his wisdom, because of his able diagnostic ability and skill. It is then I realize I have more to learn, more ability to acquire. It makes me see myself. But should a doctor with such ability make a fee not in comparison with his ability? I would reason that I had overestimated his worth, and the patient would naturally arrive at the same conclusion. I would think the consultant was bidding for my patient and the patient would wonder why was the doctor so cheap.

Why does the medical profession boast of being overworked; no time to eat or sleep; horses are too slow; compelled to use an auto? Why do we deceive by telling each other of making twenty calls a day and three confinements during the night? What delusion is this that pictures an office with a long line of waiting patients? Is this not the exception? If it were true and you were making what you told me, you would have some evidence of it; some property to show, lift mortgages and be free of debt.

The down-trodden farmer, the retired capitalist, all ask our reduction for labor bestowed upon them for we have educated the people to believe we have a mecca, a real bonanza for making money, that money is a secondary consideration, that we do not need it, for we are making money so fast that it is a pleasure to make a reduction for cash, while in truth yon need the cash so badly that you are forced to do something to get it quick.

It is this kind of hot air that is crowding the profession. The baker has heard it and is saving enough money to join our ranks. Men in all callings of life look at us with a desire to some day be able to be a doctor, live in ease and luxury, to have an easy time, and make money.

Our profession has done noble work in looking to the needs and ills of fellow man, but has taken little heed of self. Now, let's be considerate of ourselves. Learn a lesson from organized labor which teaches that to labor belong the spoils.

There is no charity in this, we must look further than such teaching and organize for the good of those who may become our charges. Do not fret away our substance in pretence of greatness, but remember that the well paid doctor has money for books, aids to diagnosis and an incentive to aid the afflicted. We would not say as does the labor union: "To us belong the proceeds of labor"; but, "give us proper recompense, that we may be prepared to minister to the sick." Can you do this under present conditions; can you equip your office modernly? Why have you not so much as a reasonably equipped office? Because you cannot afford it. Why are you using strict economy? It is because you are apeing a professional brother. He wears good clothes, looks progressive, and you

try to look like him. He is apeing you and wears good clothes because you do. Neither can afford it.

If I have a poor business and you are busy, run nearly to death doing laparotomies and cutting to beat thunder and every doctor I talk to is busy, I get blue, I cannot understand it but trust a change will come and I keep on spending the little my wife inherited. I know it's a lie, but I tell my brother I am doing all right, better than I expected. I delude him and he lied to me and we become confidential and in a moment of confidence he said he was not making a cent and then I took new courage and realized that I was not alone.

Why should members of this society set themselves on a high pedestal and tell the laity that there are only two or three doctors in this city who are sufficiently qualified for them to consult with? What is wrong with the doctor when he ignores the meetings of this society because he says there is nothing here he can learn? What's wrong when he sneers at us, and shakes his head when our name is mentioned. The same thing exists in the mind of the fractious colt when hitched up with the old mare, from which the colt is expected to learn the duties of a well broken horse. The colt is excited, champing its bit, sweating, and thinks the old mare ignorant of her duty because she don't get out of place.

When I need help, let me turn to my brother, speak for him words of confidence to my patient. Teach the people that this society membership can give them good service. Tell them that we have here good surgeons, good specialists and talk as if you had good sense. If I can not get a good fee, why should it not be better to help you get it than to give it to Chicago. If I am behind the times and don't know much, then come to our meeting and teach me. If then I am convinced you know it all, I surely shall call you, when needed.

Here, in this society, is the place for discussing our deportment in the practice of medicine. Just as long as medicine is progressive, so long will there be a difference of opinion between the progressives and those who stand still. This organization should be and is our post-graduate school. Prepare for and fix right here those things that lessen our personal loss in practice. You and I are integral parts of the medical decorum of this city. I can not destroy your medical career without blacking my own.

Why should not your fellowship in this society be as dear and revered as the unionist card. If the unionist card was ignored and members treated as we do each other, it would be despised and rejected. This want of harmony, too much jealousy, stills the ambition and blasts the hope of a McDowell, Gross or Sims rising up among us. If you doubt it let this society endorse and praise the work of the earnest doctor and see how quick the news is spread, while honor and prestige would make for us one whom it would be our pleasure to say had sat among us.

To be such you must merit our confidence. Not by egotism and self conceit, but as a teacher imparting widsom, a leader; be progressive and an independent thinker. When you find it is impossible to know it all and learn that some can even learn sermons from running brooks, or be

confounded by the simplest atom; that your spurned doctor might be your guide; then why not ask him, thank him, give him credit for possibly the one talent that was needed. That's brotherly. That's professional ethics, pure and simple.

APPENDICITIS FROM A MEDICAL STANDPOINT*

E. E. SARGENT, M.D.
LE ROY, ILL.

The subject assigned to me for discussion is undoubtedly a very important one notwithstanding the fact that many think that anything said or written at the present day pertaining to appendicitis is rather of the common order. I wish to say in the beginning, I am not competent to present anything of an ultra scientific nature, and what few ideas I have formed and hurriedly gathered together will not be startling.

When the post-mortem room discloses the fact that one out of every three to ten, as variously stated, has some pathologic lesion, denoting appendiceal inflammation at some time, it certainly is deserving of our consideration, and we cannot know the subject too well. Definite lines of procedure in the management of appendicitis have been laid out for us by eminent men in the profession, men of vast experience, whose advice is valuable and whose words should be heeded.

Unfortunately this advice is not uniformly followed by the profession and the untimely results in many of these cases only serve too strongly to impress us with this truth. If you have settled this matter satisfactorily to yourself and have decided in your own mind how to manage appendicitis from a medical standpoint, I can truly say you have accomplished more than I. In my country practice I have had perhaps an average number of these cases to care for and I can freely confess to you that I have often been at a loss to know what course to pursue.

Appendicitis is a very common complaint; you and I meet it in its varied forms almost every day, and yet the case you have to-day differs from the one of yesterday. Your diagnosis of probable appendicitis may be right in both cases, yet what you successfully did for the one yesterday may prove of no avail for the one to-day.

Patient A, with the cardinal symptoms of pain, tenderness, rigidity, fever and vomiting, may soon be on the road to recovery by a thorough cleansing of the bowel with enemas, an ice coil to the affected side and absolute quiet.

Patient B, with symptoms of about the same degree of severity, and under the same treatment, will probably pass to that stage where he must be viewed from a surgical rather than a medical standpoint.

Only a few years ago we heard medical teachers and writers say they could treat successfully 80 per cent. of appendicitis cases by medical means; to-day we know better than that. You have carried your patient

* Read before the McLean County Medical Society, November, 1910.

along to the end of the second or beginning of the third day with a fair degree of success, and you have begun to think this is one of the 80 per cent. *sure*, when on your next visit you find the patient more restless, pain becoming more severe, fever somewhat higher, McBurney point more tender, and then it is up to you to call in your surgical friend and have him tell you and the anxious family the depressing fact that you waited one day too long. I have had this experience. So have you, my medical brother.

On the other hand, concerning the case you had last week, perhaps you were not called in until the third or fourth day of the attack. Immediately on making your diagnosis of appendicitis you ask that your surgical friend see the case. He finds the patient not only with the cardinal symptoms of acute appendicitis but just getting over a severe chill, and the fever at 103 or 104. What does he do? Nine times out of ten it is a safe guess to say he would advise an operation, with what results we are only too familiar. I have had this experience also. So have some of you.

In the first case the medical man had possession too long; in the second case the surgeon took possession too soon. If these symptoms could be more clearly studied, the diagnosis more clearly made, the particular stage more definitely outlined, then the dividing line between medical and surgical cases would be made more accurate, and if we then acted as the symptoms pointed the way, how much better the end results would be.

Appendicitis from a medical standpoint I regard, personally, as having a very limited field; absolute diagnosis having been once made, the management thereafter is largely surgical. Conservation of natural resources is a popular subject to-day, but conservation of diseased appendiceal tissue does not meet with the unqualified approval of thoughtful medical men. Between the radicals, led by Deaver of Philadelphia, who cuts everything including inflamed appendix, localized abscess and general peritonitis; and the very conservative, who were very slow to have any cutting done, there was a wide field of difference.

This was the condition of affairs when in 1901 A. J. Ochsner entered the arena, bearing an olive branch and with this a message to the medical profession. This message was: "Wash out the stomach; give absolutely no cathartics and no food of any kind by mouth; use enemas for relieving the bowel" and make arrangements for a good surgeon.

This was nine years ago and from a medical standpoint we have not had much, if anything, better since. Whether or not laxatives should be given is a question not wholly settled. Many men of experience hesitate to pass up this mode of action. We have all seen patients with iliac pain, emesis, constipation, and a boggy tumor in the appendiceal region, readily clear up by the use of a good cathartic.

Is there room, therefore, for criticism when men get satisfactory results from treatment like this? The point arises, however, with such symptoms as mentioned, are they really undoubted cases of appendicitis, or are they cases of typhlitis only? This brings up the question, as I

mentioned before, and which I wish to emphasize if possible, for us to be more absolute, more definite, in our diagnosis.

If we can satisfy ourselves that the trouble we are dealing with is confined to the iliac region alone, then with all probability we can exclude all disorders of the gall-bladder and gall-ducts, also gastric and duodenal ulcers. If the appendix is not abnormally placed, or is not unusually long, with its tip adherent to some other organ, then we can, by means of rectal and vaginal examination, differentiate from the disorders of the uterus and adnexa.

Satisfied that the trouble is located in the appendix, let us recognize catarrhal appendicitis, without marked local symptoms; the acute form, with marked local symptoms; the chronic form, with its varied train of disorders, such as dyspepsia, anemia, liver affections and enterocolitis; and lastly, the most treacherous form of all, gangrenous appendicitis, in which the acute symptoms have all subsided within a few days, and yet the condition is accompanied by abscess formation.

The diagnosis having been settled, there seems to be no question about the advisability of an early operation; that all localized abscesses should be opened; that drainage should be established for general peritonitis; and that all appendices, tending to recurrent attacks of inflammation, should be removed.

But the rub comes in the management of those cases of about the fourth or fifth day, where they have been progressively growing worse, where the lymph agglutination of mesentery and intestines is forming the wall of the abscess cavity. "This layer of lymph, covering the surface of the intestine and omentum, offers a line of defense and serves as a barrier to the passage of poisonous bacilli into the lymphatics and the blood streams of the surrounding viscera." If this barrier can be preserved till about ten days or two weeks, then the temperature will fall, the pulse becomes slower and better, and your patient has become protected.

I believe more mistakes have been made and continue to be made from day to day in handling this stage than all others combined. I am convinced that if all surgeons would agree that this is not the time to interfere, and absolutely refuse to operate at this stage, except in rare cases, a far better understanding of this disease would soon be established, and no one can deny but that the mortality rate would be reduced.

We physicians are sometimes criticized for our slow methods of diagnosis and for bringing into the hospital cases reeking with pus. I will admit that such a condition is unfortunate but I believe we are improving in this regard and now not so many cases of this stage can be chalked up against us, as of former years. We may be a little dilatory sometimes in not rushing these patients off to the hospital in the *early* stage, but on the other hand, the surgeon into whose care he is given, should not feel in duty bound to operate on *every case* on admission, when it is in the *pus-forming* stage.

In this day and age, when embryo surgeons are springing up in every city block; when competition is running at high stage as to who can add

the greater number of major operations to his annual list; when it is customary to have a reprint of your surgical paper circulated among prospective friends; I say when all this is taking place, it behooves a candidate for the operating-room to look well as to his surgical adviser.

I am a firm believer in surgical means for the relief of a properly diagnosed case of appendicitis, but I protest against this indiscriminate cutting of every case that occurs, irrespective of the stage and of the condition of the patient.

I suspect all of us, in times past, have been guilty of administering a little opium for the acute pain in a particularly sensitive patient, yet we know its use is not advised, for even a careful observer, who is ever alert as to the state of the pulse, temperature and general make-up of his patient, may be misled and doubt created as to the progressive character of the case.

If it is so severe as to demand the use of the opiate in the first stage, it certainly needs an operation. Poultices of all kinds are mentioned only to be condemned. Put the patient to bed; keep him absolutely quiet; employ Ochsner's method exclusively, or use the ice-pack to the affected side; use a laxative if you think best, and your case will have received good treatment from a medical standpoint, whether he goes later to the operating-room or not.

SYPHILITIC EVIDENCES IN THE RECTUM*

CHARLES J. DRUECK, M.D.
CHICAGO

This paper does not embrace all of the forms in which syphilis is evidenced by rectal lesions, but only those commoner changes which are so easily mistaken for other diseases. Tumors of various sizes and ulcers of different degrees of depth when seen at the anus or within the rectum are often of confusing etiology particularly to those who think hemorrhoids, irritable ulcer and cancer are the only rectal diseases.

Some time ago a young woman with a painful ulcer at the anus came to me. She had suffered with constipation for several years and had frequently used an enema. Her physician had treated the ulcer with local applications and later by operation, but only made conditions worse. I diagnosed a phagadenic chancre which the subsequent history proved was correct. We afterward found how this young woman was probably accidentally infected by using a borrowed fountain syringe. There was nothing exceptional in her trouble except the uncommon location of the initial sore and I mention it here because the rectal expression of syphilis is not a frequent finding and yet it occurs sufficiently often to mislead because the early ulcers may be considered simple or irritable ulcers and the later ones tuberculous or cancerous. Syphilitic new formations are frequently considered malignant. I also speak of this patient because

* Read before the Chicago Medical Society, Dec. 21, 1910.

chancres within the rectum or about the anus are sometimes said to be positive evidences of unnatural intercourse.

I hope by this paper to show that the same lesions, chancres, rashes, ulcers and new formations may be found here as occur in the same histologic structures in other parts of the body, but their clinical picture is modified by conditions peculiar to the rectum, because of the superimposed infection by intestinal microorganisms, the constant abrasion of the surfaces by the feces and the irritation of the intestinal secretions.

Chancres within the rectum are rarely seen because they occasion little discomfort, only a slight discharge, and disappear spontaneously. The ulcer when seen has the usual chancre appearance; a round indurated ulcer with sharp raised edges slightly undermined.

Chancre at the anus is somewhat more frequently seen than that within the rectum. Occurring in an anal fold it simulates irritable ulcer. The chancre seen in the young woman referred to above was quite as painful as an irritable ulcer. This statement is made notwithstanding some authors say that anal chancres are painless. Anal chancres, like other ulcerations in this region, vary considerably in their degree of pain because occurring in different types of individuals, some of whom are more sensitive to pain than others. Also the degree of pain of any anal ulcer depends upon the depth of the wound. If an ulcer involve only the mucous membrane it will probably not be painful, but if it go through the mucosa and especially if it involve the musculature either by ulceration or by the fixative leukocytosis about the ulcer it is certain to be painful. If the induration surrounds the muscle fibers it immobilizes them and by squeezing the fine nerve fibers produces the same sensation as an exposed filament. Each time the stool passes it disturbs this mass as does also each action of the sufferer in sitting down, rising up, walking, sneezing or coughing. Some time ago I saw a patient with a beginning chancre in the anal folds. At this time it was painless. Later it became phagadenic and had a wide infiltration which immobilized a large part of the sphincter. At that time it was very painful.

Chancres here run the same course as chancres elsewhere and leave small bluish white scars which are later very difficult to find. For this reason the diagnosis cannot be made afterwards.

Secondaries.—In the secondary stage of syphilis we find two forms of ulcerations that are confusing:

1. The mucous patch.

2. The large ragged ulcer a sequence of necrosis produced by the stangulation of circulation in the tissue surrounding the syphilides.

After the second week of the infection there is sometimes found at the muco-cutaneous junction an erythema which might be mistaken for an acute eczema. In a couple of days little vesicles appear which break down and leave red or gray ulcers which are irregular in outline and upon an indurated base. They may be single or multiple. If multiple even though they are close together each ulcer preserves its own form. The edges are not undermined and the intervening tissue remains healthy. When the vesicles rupture there is a little thin discharge which

keeps the parts wet and macerated. As the ulcers enlarge they become saucer shaped and are termed *plaque porcelainique*. The discharge and moisture of the opposed buttock produces an hypertrophy and before the mucous patches are healed there develops broad flat warts, the condylomata lata. This condition, although resulting from a syphilitic lesion, is not itself syphilitic and is not amenable to antisyphilitic treatment.

Mucous patches within the rectum are very rare. Molliere (Tuttle) has reported only one case.

2. Ulcerations secondary to other syphilides.

When the mucous patch appears there also develops the surrounding congestion which interferes with the local circulation and sometimes the tissue sloughs away. This may happen with any other syphilitic eruption about these parts, *i. e.*, papular, macular or pustular. These resulting ulcers are gangrenous gray in color, irregular in outline and ooze blood on slight touch.

Within the rectum the cellular infiltration and induration produce an edema of the mucous membrane. This swelling increases friction and necrosis is produced usually in several places. The ulcers are regular in form, circular in outline with clear sharp edges and usually the whole trouble is confined to the mucous membrane. If seen early they are amenable to treatment and may heal with very little resulting scar.

As I have mentioned above, these ulcers cause few symptoms and if untreated they tend to enlarge both on the surface and in depth until they may extend through the deeper coats of the rectum and even into the pelvic structures. If they are on the anterior wall of the bowel the peritoneum may be opened and infected. If the patient also suffers from some other systemic disorder such as nephritis, tuberculosis or anemia the ulcer may spread out almost unlimitedly. Kelsey, quoted by Tuttle, reported a case where the whole rectum was circled. The favorite location for these ulcers is about one inch above the sphincter, but they are found less frequently higher up, even to the colon.

The ulcers are sluggish in appearance with sodden surrounding tissues and are usually chronic although not always. Occasionally one is phagadenic for the reasons already assigned. These ulcers are liable to be confounded with tuberculous ulcers. Paget in his classical differentiation[1] says they have sharp, well-defined edges with level base. This is in contrast to the ragged, undermined and indurated edges of tuberculosis. If several of these ulcers coalesce they appear as one large ulcer or as a lobulated ulcer, but they do not encircle the bowel as does the tuberculous. On the other hand if tuberculosis has existed long enough to produce a number of ulcers in or about the rectum or a large excavating ulcer we will find tuberculosis in other organs. There is also considerable purulent discharge from the tuberculous ulcer. The syphilitic ulceration produces a thickened leathery feel to the bowel, but tuberculosis does not affect the elasticity of the bowel.

1. Med. Times and Gazette, 1865.

At the anus these secondary ulcers begin as small cracks or fissures in the anal folds. Their edges are somewhat raised but there is no surrounding induration. Where only one of these ulcers occurs it is often very difficult to differentiate it from the simple irritable ulcer, but of course the treatment of the syphilitic ulcer is worthless for the irritable fissure and vice versa.

Tertiary Changes in the Rectum.—There are three tertiary syphilitic changes in the rectum that are likely to be mistaken for other diseased conditions, viz:

1. Gumma.
2. Fibrous infiltration of the rectal coats.
3. Syphilitic stricture of the rectum.

Gummas occur in connective tissue anywhere and the rectum shows no peculiarities in this respect. They may be single or multiple. The gummatous tumor is a soft, elastic mass beneath the mucosa. At first they are free between the mucous and muscular coat, but later they may be attached to either or both. They are painless, usually about the size of an enlarged lymph gland, but may attain enormous size. By digital examination the feel of the mass somewhat resembles that obtained when palpating a uterus containing fibroids. These masses create no area of infiltration about them, but give a nodular feel not unlike cancer and the mass is often movable in the submucous connective tissue just as are the early cancer growths. They do not abscess or occur in chains and are thus differentiated from diseased lymph glands. When a gumma is incised the wound is prone to remain open.

Several years ago I saw a woman with what I supposed was a perirectal abscess. The patient was hysterical and a rectal examination was impossible. The mass was in the left labium and perineum. The whole surrounding tissue was red and swollen (a condition I afterward decided came from the applications). I incised the mass thinking it was an abscess, but of course, I found no pus. I then excised the mass and sewed up the wound, but it did not heal. Seeing that the wound was not uniting excited my curiosity, the potassium iodid was pushed and the wound healed kindly.

Fournier[2] reported a fibrous infiltration of the rectal wall which he said was not syphilitic but rather parasyphilitic. A hyperplastic proctitis similar to the scleroses seen in the kidneys and liver. Some time ago I saw a case of this sort and found it very interesting. A woman, aged 42 years, married, two children, no history of syphilis. About three years ago she noticed a hardness of the perineal body. The vagina seemed stiff and hard. Later she consulted her physician who gave local treatment without success. Later she had been under the care of several physicians. When I saw her she suffered from obstinate constipation which was gradually getting worse and a tentative diagnosis of carcinoma had been made. On examination the anus was found in its normal position. The skin of the perineum and about the anus was rough and

2. Lesions Tertiaries de l'Anus and Rectum, Paris, 1875.

wrinkled, dry and thickened, but not sensitive. On attempting a digital examination I found the rectal wall hard, rough and tight about the finger, making introduction very painful. The narrow cylindrical three-quarter inch rectoscope was introduced with difficulty and the bivalve could not be satisfactorily opened. The hardness and fullness of the tissues was greatest at the anus and shaded away for a distance of five inches within the rectum. The examination was painful and although it stretched the tissues considerably it did not cause any bleeding. I removed three pieces for microscopical examination and this clipping caused very slight bleeding which was easily and promtly checked. These sections showed nothing but fibrous connective tissue.

Syphilitic Stricture of the Rectum.—Just how frequently syphilis causes stricture of the rectum is a mooted question. Some authors claim that all non-malignant strictures are syphilitic while others are equally positive that strictures result only from ulcerative changes and that regardless of its type or etiology. I have in my work found strictures that were certainly not malignant and where I could not get a history of syphilis or where any response was obtained to syphilitic treatment. At any rate we do find that syphilitic stricture may follow any syphilitic ulcer chancre, secondary ulcer or broken down gumma and that it has certain peculiar characteristics. Syphilitic ulcers are inclined to follow the course of the lymph and blood vessels and as that direction in the bowel is lengthwise the contracted portion is tubular instead of sharply annular as we find it in the inflammatory stricture. The rectal wall is also stiff, rough and leathery instead of nodular like that of cancer. Of course once ulceration occurs and septic infection is added the picture is so confused that a microscopic examination of a piece of the tissue may be necessary for diagnosis. Just in passing I wish to say that the chancroid, while not syphilitic, is a close cousin and frequently produces a very serious form of stricture.

Hereditary Syphilis.—Hereditary syphilis frequently appears in the rectum or anus during infancy. The syphilitic anal fissures are quite frequently seen. They may at first be mistaken for chafing due to carelessness of the nurse, but instead of healing kindly under treatment they extend by ulceration and are bathed in a fetid discharge. Usually, however, they respond nicely under antisyphilitic treatment.

438 East Forty-Sixth Street.

SOME CLINICAL NOTES

Howard Crutcher, M.D.
Roswell, New Mexico

Pyloric Stenosis in a Tubercular Subject.—M., railroad conductor, aged 35 years, of excellent personal history, while suffering from all the symptoms of progressive general tuberculosis, began to suffer from undoubted signs of pyloric stenosis. The condition became so threatening that actual starvation was imminent. Dr. C. L. Parsons called me to see the patient September 21, and two days

later pyloroplasty was performed at St. Mary's Hospital. The patient bore the anesthetic poorly at first, but his condition at the close of a quick operation was remarkably good. Relief of the gastric distress was almost immediate. The patient died December 11, 1910. The autopsy was attended by Drs. D. H. Galloway, W. W. Phillips, C. L. Parsons and the writer, confirming the diagnosis of general tuberculosis and demonstrating a perfect result from the operation on the pylorus. The operation was necessarily attended with serious risk, but I am glad that it was performed, as it gave the patient immense relief during the few remaining months of his life and was fully worth the risk.

Spontaneous Healing of an Old Vesico-Vaginal Fistula.—A woman, aged 68 years, mother of several grown children, was operated on several years ago for vesico-vaginal fistula, the obliging operator leaving behind two silk-worm gut stitches, around which a large calculus formed. I removed the stone and the stitches in April, 1909, and advised that another operation would be necessary to close the fistula. To my surprise the opening closed about a year after my operation without further operative measures of any kind. Considering the persistency of such lesions, I regard the result as worth reporting.

DEATH FROM VAGINAL HYSTERECTOMY

In THE ILLINOIS MEDICAL JOURNAL for September, 1910, in an article concerning vaginal hysterectomy, I made the statement that I had no death to record from the operation. I ought now to explain that the article was not published until several months after it was written, and in the meantime I did have a death, which it is only just to record. The uterus was the seat of cancer. I met with a mass of tissue where I was unable to control bleeding promptly and the loss of a few ounces of blood was enough to turn the scale against the patient. She died twelve hours after the application of the clamps. She was deeply cachectic, had "flooded" seriously for years, and I have no reason to think that another attempt might result more successfully. To those who are so strenuous in their condemnation of the clamp, I might say that no other means was possible in this case. Certainly a ligature would not have been practicable. The more I perform vaginal hysterectomy the easier does it seem, and yet the more conscious I am of the dangerous possibilities that confront the operator on every hand. Every case must be considered a law unto itself, and whilst precedent and past experience are most valuable, it should be borne in mind that it is overcoming variations and meeting promptly new conditions that crown our efforts with success.

Death from Chloroform.—In December, 1909, Drs. Galloway, Phillips and I placed a man aged 26 years on the operating table at St. Mary's Hospital with the intention of performing an exploratory abdominal incision. A probable diagnosis of appendicitis had been given. The patient was a man of fine physical development. He was a very heavy drinker and but for the urgent nature of his symptoms we would have declined to operate. Dr. Phillips began the anesthetic with the utmost caution, but Dr. Galloway and I stood at the head of the patient, fearing some mishap, leaving the ordinary preparations to Sister Augusta. After inhaling about half a dram of the chloroform the patient stopped breathing. The most energetic and thoroughgoing measures for resuscitation were instituted at once, but after an hour we abandoned the case as hopeless.

It was hopeless on any account. The autopsy, held a few hours after death, revealed a condition within the abdomen that no amount of skill could have helped. There were coils of gangrenous intestine, knots of infected omentum, a

score of secondary abscesses in the mesentery, and complete disintegration of the appendix.

For several weeks the patient had been expectorating pus and there were strong suspicions that he had pulmonary tuberculosis, although the examinations revealed no conclusive evidence in the way of microscopic verification. The autopsy showed a fistula extending from the appendix through the diaphragm into the lungs, which throws a flood of light upon the whole situation. It is only fair to Dr. Galloway to state that the patient came into his hands only a few hours before the time set for the exploratory operation.

Unusual Complication Following a Clean Operation for Appendicitis.—In May, 1910, assisted by Drs. Galloway and Phillips, I operated on a girl aged 8 years for appendicitis. The whole procedure was clean from beginning to end. The patient appeared to do well for forty-eight hours, when she suddenly developed symptoms of acute infection, which alarmed me thoroughly. A most searching examination of the abdomen revealed no complication. The wound was in perfect condition. On examining the throat, however, all was easily explained. Pharyngitis was very extensive, involving the tonsils and the uvula. Something simulating sub-acute rheumatic arthritis developed, which gave the patient the greatest discomfort for nearly two weeks. Recovery was complete and the cure will be worth while to the little patient for the remainder of her life.

This case recalls another which occurred in Chicago fifteen years ago. I had made all preparations to operate on a man aged 48 years, for recurring appendicitis and called at his home at eight o'clock one morning for that purpose. Some puzzling symptoms having appeared, I decided to postpone operative measures, and observe further developments. The next day he was down with the most serious form of scarlet fever, from which he recovered slowly, and from the effects of which he died several months later. I was unable to follow the case fully, but I learned that death was due to acute Bright's disease. Unfortunately no autopsy was held, so the record lacks what is most essential, namely, pathologic confirmation.

Probable Sarcoma, with Prompt Recurrence Following Operation.—A sailor, aged 50 years, called to see me concerning a progressive swelling in the left groin. He was suffering from chronic tuberculosis and had a well-marked specific history. I told him that the growth was in all probability sarcoma, that its prompt removal was advisable, but that it would most probably return within a year. We appointed the next day for the operation, but before leaving the office he remarked, "Doctor, I have a very sore foot, which I wish you would look at." Examination of the sole of the left foot disclosed the presence of a large pigmented mole, now the seat of deep ulceration. The next morning at St. Mary's Hospital I removed the tumor from the groin and cut deeply into the sole of the foot in removing the ulcerative area. Recovery was unusually prompt, the patient saying to his friends that he was "better than ever in his life." Specimens of the tissues removed were sent to Dr. Robert Smart of Albuquerque for examination, who at first reported that they were sarcomatous, but a few days later on sent me word that they might be modified syphilitic growths. I showed Dr. Smart's letter to the patient and told him that he had better take up a course of thoroughgoing alterative treatment, which was pushed to the utmost point consistent with safety. I did not see the patient for several months, when he returned to Roswell with recurrent sarcoma in its most virulent form. It was impossible to count the growths in the scalp alone. The original growth in the sole of the foot had returned and the left groin was as bad as at first. The patient went to Hot Springs, Arkansas, but died within a few days after his arrival at that place. Whilst this patient was undoubtedly syphilitic and tubercular, I believe that he

fell a victim to sarcoma, in spite of the microscopic findings. Sarcoma to my mind is the master spirit of all pathologic changes. It is, so to speak, the major premise of all morbid developments.

The lesson in this case, as in all others, is to remove by a radical operation every morbid growth without the slightest possible delay. We have as surgeons to walk by the light we have, trusting the future to bring forth something better. In the light of the past every tumor should be attacked along proper surgical lines. If there were more early and complete operations there would be more cures and consequently more living testimonials to the value of modern surgery. The patient who trifles with a tumor is laying up a day of sad reckoning.

A REMARKABLE CASE OF MAMMARY CANCER

In 1898 I operated on a woman aged 50 years for carcinoma of the right mammary gland. The operation was confined to scraping away sloughing tissues, as the husband of the patient, although a physician, absolutely tied my hands, insisting that he "had always seen death follow operations on the breast!" Recurrence followed in the opposite axilla. Cancerous nodules appeared here and there, and my recollection is that I performed five or more operations at various times, covering a period of eight years, all of which time the patient appeared to be in perfect physical health. She was always in good spirits, seldom complained of serious pain, ate heartily, and went about as usual. I ought to say that the clinical picture was perfect and that the diagnosis of scirrhus was repeatedly confirmed by Dr. W. A. Evans of the Columbus Laboratories. After my removal from Chicago this patient was operated on several times, once, as I recall, by Dr. Charles Adams. She died in November, 1910, at St. Luke's Hospital, Chicago. That she should have been the victim of a serious cancer for about fifteen years seems to me so unusual that I feel that the case ought to be recorded. Several years ago I reported some of the features of this case in the columns of *American Medicine*, but as I have no records at hand I am unable to give the date of that publication.

Large Myoma Disappearing After Cutting Off Blood Supply.—Several years ago I reported a series of cases of inoperable myomata treated by the method of ligating the large vessels of the broad ligaments. The results were wholly satisfactory. Last September a colored woman, aged 40 years, married, never pregnant, consulted me for the relief of an enormous myoma. The growth extended from the pelvis to the diaphragm. I exposed the tumor through a long incision, removed several fibroids from the mass, tied off the broad ligaments, removed both ovaries and tubes, and closed the abdomen. For many days following the operation the patient ran several degrees of temperature and at one time developed a phlebitis of the left leg and thigh; but, four months after the operation, the growth is about one-half its former size and is steadily going down. Meantime the woman has returned to work and feels perfectly able to perform her usual duties.

Speaking of this case brings to the mind a pleasant day that I spent with the lamented Nicholas Senn in Milwaukee in the early days of June, 1905. Our conversation was private, but I wish it might have been heard

by the whole world of medicine. Professor Senn must have known something of the place he will always hold in the realm of surgery, for he spoke very candidly and without reserve. I recall perfectly one of his observations:

"Surgery will become dangerous whenever technique overshadows those underlying principles of the art. Cutting and sewing are not much, generally easy to do, but underlying principles are everything. There is too much desire to-day to show off this or that. Of course, we must always do the best we can in a mechanical way, but mechanics are not surgery."

The readers of THE JOURNAL will doubtless appreciate this little gem of wisdom from the lips of one of the most illustrious men who ever lived. One day, when our world is wiser than it is to-day, there will be more talk of Holmes, Gross, Senn, Pasteur, Koch, Behring, and less of some of the warriors of earth.

—During the months of January and February of this year 13,458 physical examinations were made of children in the public schools. Of this number 5,350 were found to require treatment. The principal ailments, and to which parents were urged that immediate attention be given, were as follows:

Defective vision and other diseases of the eye, 1,940; bad teeth, 5,245; enlarged glands, 1,738; defective hearing, 174; defective nasal breathing, 563; adenoids, 599; tonsils, 2,550.

To properly appreciate the value to the child of medical school inspection when properly done it should be clearly understood that any one of the minor defects noted, and for which treatment was urged, mounts to a serious and positive handicap or hindicap to the child's educational development and progress. And this is leaving out of consideration entirely the serious physical harm that so often follows neglect to treat and correct in their incipiency these ailments so common during the adolescent period.

It is to be hoped, therefore, that parents will show their appreciation of the Department's school work and at the same time give earnest evidence of their interest in the welfare of their children by giving prompt attention to the recommendations and advice of the medical school officers. Their work, though paid for out of the people's money, is altruistic in character. It simply means giving the child the best possible chance to equip itself for its future career, so that it is perfectly clear that to make this work of the highest possible value parents must realize to the fullest degree its importance and give to those entrusted with its performance in the schools their best support and cooperation.—*From Bulletin, Chicago Department of Health.*

ILLINOIS MEDICAL JOURNAL

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APRIL, 1911

THE DECISION OF THE ILLINOIS SUPREME COURT ON THE ITINERANT VENDOR

Referring again to the question which was mentioned in our last issue, we quote the following from the *Journal of the National Association of Retail Druggists,* Chicago: "The itinerant vendor situation is most chaotic. The latest Illinois supreme court decision is responsible for this. This decision and an earlier decision of the same court known as the Noel decision give a strong hint as to what future legislation should be. In the one case the itinerant vendor section of the medical practice act was declared unconstitutional, because the goods sold were treated as merchandise and did not require, under the law, the use of any professional skill on the part of the seller; and, in the other case, the section of the pharmacy law which requires that all proprietary medicines be sold by registered pharmacists only was held unconstitutional on the same ground. It will be seen from this rule laid down by the court that if the people are to receive any protection whatever, our laws should provide that registered pharmacists, either individually or through their pharmacy board, should determine what proprietary remedies are safe and proper remedies to be sold to the people of the state, and what remedies should not be, thereby exercising their professional skill in behalf of the people for their protection."

While we have often felt called on to criticize the position of this druggists' journal on other things, we believe its position in this matter entirely correct.

THE CLAIRVOYANT CRIMINAL

Springfield, said to be one of the most fruitful towns for charlatans and frauds of all kinds, has just witnessed the successful "wonderworkings" of one of the most daring swindlers of the clairvoyant class. The tale is amusing enough to be interesting. This fellow called himself a "professor," of course, and worked the healing dodge together with prayer and magnetic accompaniments. He wore a Hindoo head dress and an oriental gown, was of handsome appearance, dignified carriage and went by the name of Hudson. He was in the city about three weeks and left some thousands of dollars to the good. His devotees were susceptible women although one coal black negro of nearly 70 years scraped together sixty-five good dollars for him on the promise that his youthful vigor would be restored. By various pretenses he secured most of the money from trusting women. They were told to appear on the morning of Friday, March 24, prepared for a surprise. They got the surprise. Some expected to find that the money left with him would be doubled; some to have their rheumatism cured; some to have purchasers willing to pay a high price for the property they were offering to sell. Four of the "dear ladies" swore out warrants, which apparently will never be served. Many others concealed their losses rather than be exposed. One of the victims, a Mrs. Grundy, is reported to have said: "The 'professor' certainly seemed to have some sort of electricity in him, and appeared to be full of it. Each time he held my hand I could just feel it flowing through me."

Another, Mrs. Hahn, is reported to have said: "I never saw such a rigamarole as that professor put on. He would take my hand and hold it to his ear and say: 'Dear woman, you've had lots of trouble. The evil influences and evil spirits are working against you. I'll make you happy yet, and you'll have happy days.' All the time he pretended he was in a trance and communicating with the spirits. I paid him one dollar for his first reading. Then he asked me several questions which I answered. One was very personal, but nothing wrong in it. I told him I was somewhat worried about my son, but he said, 'I'll fix it so your son will not give you any trouble on that account.' I told him that I would be very thankful if he would. Then he told me it would cost $7. I told him the price was pretty high, but he held up to me the satisfaction I would derive from not worrying over the matter, and finally I consented. Then he prayed and called on the Holy Spirit and Christ. Why, God should have paralyzed him right then and there for the work he was doing and intended doing. He would stand up and pray and then sit down at my side and hold my right hand while I placed my left hand on the Bible. Then he told me to think of my son and went through some more movements. I told him I would like to sell some of my property, the house and two pieces on Fourteenth Street, between Madison and

Jefferson Streets. I told him I wanted $2,600 for this place on Enos Avenue, and $1,200 for either one of the other places. He told me he would be able to get me $3,000 for this house and $1,500 for either one of the other places. He told me then, 'Now just before you go to bed, think of your son and of the property, and then the last thing to think of before you go to sleep is me.' He wanted me to do this for three nights and then see him again. This first reading was about ten days ago, and he made no charge for either the second or third reading. The third time he asked me if I could get $1,000, and I told him I thought I would be able to get that much. Then he said to do so by all means and take it home and place it under my pillow when I went to bed, and the evil spirits would flee. I then borrowed the money from my brother, yesterday morning. At 5:30 o'clock yesterday afternoon I went to his place and took the money with me. Then came the big test. He started out by sitting at my side, holding my right hand and with my other hand on the Bible. He went into one of his trances and talked of the moon and sun, and said he could then do something with the money. He lit a red fire, then passed it over my head, then stood over me. Then he prayed some more and went through some peculiar motions. Then he opened the Bible and told me to place the $1,000 in it. Then he said: 'Can you leave the money with me?' to which I replied: 'I don't think that I can.' He had a powerful influence over me, however, it seemed, and I finally gave in and placed the money in the Bible. I told him I would be worrying about the money then, and he informed me that was just what he wanted, to have me worry about it, and I would be sure to have my mind on it. I left the money with him at about 5:30 o'clock last night and he told me to be sure and be back at 11 o'clock sharp this morning. He said that inside of twenty-four hours after I left him there would be a purchaser for the property, who would buy it at much bigger prices than I had asked for it."

The "magnetism" used is said to have been obtained through a wire leading to the professor's chair from the telephone. This stolen electric current was passed on to the victim, who completed the circuit.

SUPPLEMENT TO THE JOURNAL

For the first time in its history the Committee on Publication deemed it wise to issue a supplement to THE JOURNAL which was dated March 20, 1911. Owing to the fact that the hearing on the osteopathic bill was set for March 21, it was finally decided to delay the issue until after this hearing. Notwithstanding the short notice our members put up a vigorous opposition to this measure with the result that the Judiciary Committee of the House reported the bill out unfavorably by a vote of 14 to 5. As noted in the editorial of the supplement, this favorable result was largely due to the efforts which had been made before and since the election of 1910, and is a positive proof of the power of the Society when a proper effort is made. Up until this year our efforts had been spas-

modic and offensive measures were defeated only at the expense of much time and money. We trust the lesson will not be lost, and that each year in the future the candidates for the legislature from all parts of the state will be pledged to stand for what is best for the scientific profession as represented by the Illinois State Medical Society.

As was pointed out by us last year the osteopathic profession is largely dwindling to its final and complete extinction. There are certainly not more than 300 osteopaths of both sexes in the state, and fully 40 per cent. of this number are women. On the other hand, the number actively interested in the upholding of the high standard, numbers among the medical profession itself no less than 12,000, the dentists not less than 4,000, the druggists not less than 4,000, to say nothing of the overwhelming proportion of the citizens of the state who have no use for a fad like osteopathy. While we feel confident that osteopathy has had its day, yet it is not the less necessary for us to be active in asking the members of the General Assembly to stand firm for our rights.

MEDICAL HISTORY OF ILLINOIS.

This month we take pleasure in producing a chapter of Medical History of Illinois from the facile pen of Dr. O. B. Will of Peoria, formerly president of the Illinois State Medical Society. Dr. Will has been in practice in Peoria County for more than forty years, and has been fortunate in knowing personally most of the pioneers of that and adjoining counties of central Illinois. His article will be read with great interest by all our members who appreciate the history of the beginning of things medical in this empire state. The doctor has also drawn a great many lessons from past history which applies to conditions as they now exist all over the state. The bickerings, the petty differences of the early practitioners are almost equaled by conditions different but similar at this time in many communities. If this article serves to inspire a single physician to look on professional life from a broader standpoint, it will indeed accomplish a useful purpose.

We hope that Dr. Will's history of Peoria will be followed by communications from other parts of the state. It is high time that the early history be written. The pioneers have nearly all passed away, and when they have gone much that might now be gleaned will be lost forever. Let us therefore have communications each month from at least one county until the entire state is covered.

PRESIDENT TAFT AND THE MEDICAL PROFESSION.

President William Taft has been the most consistent friend of the medical profession we have known in recent public life. He has constantly urged the passage of a bill creating a department of public health, and were it up to him alone this much needed piece of legislation would

be on the statute books. Very recently Mr. Taft expressed a judgment on the value of the services of the profession in eradicating diseases of the tropics which shows him well posted on this very important matter.

Mr. Taft was either in the Philippines as Governor or Secretary of War during the studies of malaria and yellow fever, and of course was intimately acquainted with the researches made by our profession.

To the Philadelphia Medical Club.—On the occasion of a banquet which he was unable to attend, the president wrote that the discoveries of American physicians from researches which the taking over of tropical lands made necessary "were ample to justify the expenses of the Spanish War ten times over." Had those researches been encouraged and endowed in the usual manner the return on the investment would have been considered rich indeed. Here is a consequence of one war which the American people unanimously may view with pride, a record of achievement unsurpassed in medical enterprise, however promoted. The triumph is emphasized when it is considered that governments engaged in the colonial business in the tropics for a century or more failed to enlighten the world in this respect. While the medical profession in the United States is thus renowned, it should not be overlooked that to the army physicians the credit is directly due.

Correspondence

RESOLUTIONS OF THE WILLIAMSON COUNTY MEDICAL SOCIETY

We have received from the secretary of the Williamson County Medical Society the following resolutions which explain themselves. It is an encouraging sign when county societies express their sentiments on fundamental principles as clearly as the brethren in southern Illinois have done. These resolutions as we understand have been forwarded to all societies in the state, and similar action has been taken by many of them. While the language of the resolutions is somewhat complicated, yet their meaning is evident and no doubt the peculiar wording has served to call unusual attention to them.

RESOLUTIONS

MARION, ILL., March 2, 1911.

WHEREAS, In the larger cities of the United States there exist a vast number of unnecessary medical colleges, which are run for commercial purposes only; and

WHEREAS, As an inevitable consequence of the intense competition among medical schools arising from this state of affairs, great numbers of incompetent and even illiterate physicians are graduated yearly; and

WHEREAS, Owing to the aforesaid competition among the schools, some even of our best equipped medical colleges are graduating improperly qualified physicians; and

WHEREAS, The state boards of examiners have not, as a rule proved themselves capable of neutralizing, or willing to neutralize, the excessive leniency of the medical colleges; and

WHEREAS, Many city physicians, by means of their professorships in the aforesaid unnecessary medical schools, reap various advantages in the way of honors and fees, which advantages presumably more than compensate said physicians for

the increased competition in practice resulting from the large number of unnecessary schools and from the great freedom with which diplomas and degrees are conferred—compensations which nowhere find their counterpart in country practice; and

WHEREAS, The aforesaid unnecessary medical colleges and the aforesaid lack of stringency in college and state board examinations, with the resulting intense competition in country practice without the compensatory increase in honors and fees enjoyed by the aforesaid city physician as a consequence of the aforesaid deplorable state of affairs, is simply spelling ruin to the country practitioner—a ruin which in no way benefits the public, now, therefore, be it

Resolved, By the Williamson County (Illinois) Medical Society that the management of the American Medical Association be thanked for the services already rendered in the way of elevating American Medical Standards, and be it further

Resolved, That the said management of the Association be requested to employ hereafter their utmost endeavors to raise the standards of medical (including preliminary) education and of medical practice in the United States of America until these shall have become fully equal (if not superior) to those prevailing in the various countries of Europe.

RESOLUTIONS NO. 2.

MARION, ILL., March 2, 1911.

WHEREAS, Various individuals, or collections of individuals, are continually urging, at almost every meeting of the Illinois Legislature, the passage of laws, the object of which is to secure for various persons the right to treat the ailments of the human body, without such practitioners having first submitted themselves to the long and arduous training which such a right would logically presuppose; and

WHEREAS, It has been found by experience that those who seek the passage of such enactments almost invariably do this under color of having discovered some new "school" of medical practice; and

WHEREAS, The promoters of such alleged new "schools" of medical practice almost invariably base their right to practice in spite of an abbreviated course of study, upon the assertion that they do not propose to exercise the healing art in all its extent, but only in certain branches or by certain restricted methods; and

WHEREAS, Experience has shown that those who are thus licensed to practice some particular school, do not, when once before the people, remember their limited pretentions, but proceed straightway to the treatment of all the various bodily ills and by many other methods than those to which, when applying to the legislature, they proposed to restrict themselves; and

WHEREAS, The machinery of the courts has proved itself inadequate to rectify this state of affairs, inasmuch as it cannot deal with the subtle distinctions which exist or can be made to exist between the various so-called "schools" (which distinctions indeed could be multiplied indefinitely, even to the creation of an infinite number of so-called "schools"); and

WHEREAS, There would seem to be no more real reason why "schools" of medicine should be established than why "schools" of law should be established (the greatest room for differences of opinion being properly allowable in either profession, without for that reason letting down the bars of study and adequate preparation); now, therefore, be it

Resolved, By the Williamson County (Illinois) Medical Society that it hereby place itself on record as being unalterably opposed both to the creation of new "schools" of medicine and to the extension of the powers of practice of the already existing "schools"; and be it further

Resolved, That his Excellency, Governor Deneen, and the Honorable W. O. Potter and the Hons. Hall Whiteaker, R. D. Kirkpatrick and R. P. Hill be hereby requested to exert themselves to their utmost to prevent the enactment of any further legislation looking either toward the creation of new "schools" of medicine or to the extension of the right to practice of already existing "schools"; and be it further

Resolved, That copies of these resolutions be forwarded to the said Governor Charles Deneen, the said Honorable W. O. Potter, and the said Hons. Hall Whiteaker, R. D. Kirkpatrick, and R. P. Hill.

Signed,
WILLIAMSON CO. (ILL.) MEDICAL SOCIETY.

Committee on Resolutions:
DR. T. H. SHASTID,
DR. A. J. AIRD,
DR. C. BROWN.

ERNEST JONES AND PSYCHOANALYSIS

To the Editor:—In the March number of THE ILLINOIS MEDICAL JOURNAL you published the discussion of a paper by Dr. Ernest Jones of Toronto on the psychoanalytical method of treatment. In view of the fact that Dr. Jones' closing remarks, made at a time at which a reply was impossible, contained a rather severe arraignment of the writer, and are in part at least published in your journal, I shall ask the privilege of replying to them in your columns.

His first criticism, wisely omitted, it seems, in the copy submitted to the printer, was that I had spoken of tabes in my discussion, when in his paper the word tabes did not occur at all. The truth of the matter is, that he had not used the word tabes, but rather the term locomotor ataxia. Since the learned gentleman from Toronto is director of a clinic for nervous and mental diseases, it seems hardly possible to assume that he is unaware of the fact that the two terms are synonymous. I shall leave it to the reader to decide, whether under these circumstances his denial, made in a most dramatic manner, comes within the range of justifiable criticism.

Dr. Jones claims that Freud uses the term sexuality "in a definite, logical sense." That is exactly where we differ. If that were true there could be no argument at all, but it is precisely because we believe that Freud goes altogether too far in his definition that many of us cannot accept his theory. The brilliant sally contained in the second part of this same paragraph was clearly an afterthought. At least, I do not recall having heard it at the time of the meeting, nor is it contained in the stenographic report of the same. If all human activities are to be traced to a sexual factor, then indeed a sexual factor must be responsible for the psychoneuroses, as well as for all other psychic manifestations, be they normal or abnormal. It seems to me that I was sufficiently clear in stating that the premises in this argument are to me unacceptable. I did not, as Dr. Jones would have us believe, criticize Freud for changing his views. Most of us do that occasionally, and I hope to see the day when even Dr. Jones will do so. In fact, I stated specifically that "no scientist

need be ashamed to modify a theory," but I not only said, but by giving specific facts demonstrated, that in changing his views Freud weakened his theory, which is quite a different thing from merely modifying it.

At the time of the meeting I gave a number of examples of what appeared to me absurd interpretations of dreams. I mentioned at the time that these examples were taken from a book recently published by one of Freud's pupils, Hitschmann, who in his preface states that the book was read and approved by Freud himself. This book Dr. Jones claims to have read—not once, but several times. I thought it advisable to quote authority for these examples, because I feared that some of the audience who were not familiar with the literature on the subject, might, just because of their absurdity, doubt the correctness of my statements. That such a doubt should be expressed by a man, who had given as much time and study to this question as Dr. Jones, was a surprise indeed. When he stated positively "that Freud has never said anything resembling this," I can only ask him to read Hitschmann's book once more. If he will turn to page 69 of that work he will find among a list of "typical sexual symbols" ("typische sexual-symbole"), *quoted from Freud*, the very two which he objects to, together with quite a collection of similarly absurd ones. If, therefore, he claims that Freud has never said anything resembling this, his statement is flatly contradicted in a book read and endorsed by the father of the psychoanalytical method himself.

The next paragraph reads as follows: "Dr. Kuh says he has read in Hitschmann's book that thumbsucking represents a *sub*conscious sexual act. This must certainly be an error, for Hitschmann never used the word *sub*conscious, etc. . . ." Any one who has read Freud would know that thumbsucking is mostly performed at a time of life when there is no *un*conscious [sic!] mentality at all." What Dr. Jones really said at the time of the meeting is as follows (I am quoting from the official stenographic report, obtained through the courtesy of Dr. Suker, Secretary of the Chicago Medical Society): "Dr. Kuh has read Hitschmann's book, and says that therein thumbsucking was represented as an attempt to gratify a *sub*conscious sexual desire. I have read the book three times through, and I do not find that it contains these words. Anyway, that would not be compatible with the Freud theory, because according to Freud there is no *sub*conscious life in the very young." What I really did say (quoting from the same official report) is as follows: "Now I cannot follow him when he asks us to see in the sucking of the thumb of the infant an attempt to gratify an *un*conscious sexual craving." I wish to submit that for the purpose at hand it is absolutely immaterial whether the act be subconscious, unconscious or conscious. The only essential thing is that Freud and his followers see in this act a sexual significance. When Dr. Jones, in closing the discussion, claims that I spoke of a subconscious sexual desire, he misquoted me; when in his printed remarks he disclaimed the existence of an unconscious life in the very young, he makes a statement which need hardly be refuted here. Furthermore, Dr. Jones, if he will read Hitschmann's book for a fourth time, will find on page 33 the statement that the habit in question may

be continued "bis in die Jahre der Reife," when we find conscious, subconscious and unconscious mental activities. Incidentally, I spent a pleasant hour or so attempting to understand how the *sub*conscious (or is it unconscious?) life can be traumatized at a time at which it does not exist. I must confess myself incapable of performing the necessary mental acrobatics.

The discussion was closed with these crushing remarks, considerably modified in the printed report: "In view of all that Dr. Kuh has said, I must say that I am hardly surprised that he concludes by saying that *in the cases* in which he has tried psychoanalysis he has had bad results." It is not uninteresting as an illustration of Dr. Jones' methods to quote from my own statements the words on which this discourteous sentence is based: "Under these circumstances, and in view of the fact that *in one instance* I have certainly had disagreeable results, I feel that it is not a safe method of treating the psychoneuroses." It is precisely because of such methods as those used by Dr. Jones and other of Freud's pupils who substitute abuse for scientific argument, that a strong feeling of antagonism has arisen against these theories. If such antagonism is evidence of ignorance, as they would have us think, I may not without pride point to the fact that I share this stigma with such men as Forel, Hoche, Aschaffenburg, Oppenheim, Kraepelin and others of similar standing and reputation.

SIDNEY KUH.

To the Editor: For obvious reasons this letter must appear anonymously. I desire to submit to you a question that appears to me to need some discussion.

I reside in a small city where gossip is the main product. A man aged 30 years, head cook in a leading hotel, was referred to me by a colleague for diagnosis. I found an undoubted case of syphilis in the desquamative stage. The case had been without treatment of any sort from the beginning. The skin was full of scales and the throat badly ulcerated. The tongue was studded with mucous patches. The hair was falling out in bunches.

I told this man his condition, offered my services free of all charge, but said to him that he must not under any circumstances return to his work. Moreover, I assured him that I felt it to be my duty to report his condition to his employer.

With the consent of the patient, I reported to the employer, who paid off the man and bought him a ticket to another town. Ought not this man to have been quarantined?

Within a year I had the same experience with the same hotel in the person of another patient, and followed precisely the course that was taken in the former case. Was I not justified in reporting the condition to the hotel proprietor?

Within a few months I saw five cases of syphilis in which the primary lesion was about the mouth and lips. In two of these cases I have the best of reasons for saying that the patients contracted the disease in a way

wholly unknown to them. Both were frequent diners at the hotel where the infected cooks were working. INQUIRER.

HOTEL ACCOMMODATIONS AT AURORA

We have received the following statement in regard to hotel accommodations at Aurora, which would indicate that the profession and citizens intend to make ample provision for the care of the visitors.

AURORA, ILL., March 20, 1911.

To the Editor:—Received your letter in regard to hotel accommodations.

The Hotel Arthur can accommodate..... 150 people; rates $2.50-$3.00
The Hotel Bishop can accommodate ..... 150 people; rates $2.00-$3.00
The Hotel Grand can accommodate..... 75 people; rates $1.50.....
The Hotel Artlington can accommodate.. 50 people; rates $1.50-$2.50
The Hotel Schiltz can accommodate ..... 50 people; rates $1.00-$1.50
The Hotel Burton Block can accommodate 30 people; rates $1.00.....

The Hotel Arthur will be nearest to the meeting place. Besides the hotel accommodations we will have a list of rooms in private families where the members will be well taken care of. These rooms will be only in the better homes. We will have automobiles at the depot to convey members to the various destinations. During the G. A. R. encampment, Aurora took care of between 1,000 and 1,500 people and had accommodations in great plenty, so we will have no difficulty in taking care of all who come. Our endeavor is to do the thing up brown, and we trust that Aurora will have the pleasure of giving the State Society one of its most enjoyable meetings. Aurora is the best city in Illinois. Drop in on May 16 and we will prove it.

Most sincerely,

H. A. BRENNECKE, M.D.

ANNUAL MEETING AT AURORA

The sixty-first annual meeting of the Illinois State Medical Society will be held May 16, 17 and 18 at Aurora, Kane County. There is every reason to expect a very large attendance. Those accustomed to forecasting these matters prophesy the largest in the history of the Society. The city of 35,000 is in the beautiful Fox River Valley, only one hour's ride from Chicago, to which it is connected by both electric and steam railroads. Its railroads are the C. B. & Q., B. & N., F. R. V., E. J. & E., I. I. & N., C. & N. W.; and it is connected by trolley with nearly every other Illinois railroad entering Chicago.

The accommodations are ample. The following hotels are already making reservations: Hotel Arthur, Hotel Bishop, Hotel Arlington, Hotel Grand and Hotel Schlitz.

SECRETARY OF COMMITTEE OF ARRANGEMENTS.

Preliminary Program

ANNUAL MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY, TO BE HELD AT AURORA, ILL., MAY 16, 17 AND 18, 1911

The following program is merely a preliminary arrangement. The final program will appear in the May JOURNAL, with an announcement as to the orators and various addresses, with completed arrangement of the program.

1. The Health Conscience and the Drink Problem, C. B. Johnson, M.D., Champaign.
2. Limb Grafting: Technic, Results, V. D. Lespinasse, M.D., Chicago.
3. The General Practitioner and Preventable Blindness, Thomas A. Woodruff, M.D., Chicago.
4. *Gynecologic Symposium:*
   a. Vesicovaginal Fistulæ, Alice Conklin, M.D., Chicago.
   b. Hernias of the Ovary and of the Fallopian Tube, Aime Paul Heineck, M.D., Chicago.
   c. The Puerperium Treated as a Period of Prophylaxis Against Subsequent Abdominal Pelvic Diseases, Carey Culbertson, M.D., Chicago.
   d. The Abuse of Local Treatments in Gynecology, Henry T. Byford, M.D., Chicago.
5. Strangulation of Bowel, with Report of Case, J. Estill Miller, M.D., Pittsfield.
6. Diagnosis of Acute Poliomyelitis, L. Harrison Mettler, M.D., Chicago.
7. *Kidney Symposium:* Late Methods in the Diagnosis of Kidney Diseases.
   a. Functional Diagnosis, Herman L. Kretschmer, M.D., and L. E. Schmidt, M.D., Chicago.
   b. Examination of the Urine and Blood in Relation to Diagnosis, A. R. Elliott, M.D., Chicago.
   c. Diagnostic and Therapeutic Uses of Pelvic Lavage and Direct Application to the Kidney and Ureter, L. W. Bremmerman, M.D., Chicago.
   d. Eye Findings in Renal Diseases, C. E. McClelland, M.D., Decatur.
   e. Lantern Slide Study of *X*-Ray Diagnosis of Kidney Lesions and the Results of Injection of the Pelvis of the Kidney with Silver Salts, Patrick S. O'Donnell, M.D., Chicago.
   f. Pyelonephritis in Some of Its Earlier Phases, E. Mammen, M.D., Bloomington.

   Discussion will be opened by William Fuller, Charles E. Paddock and D. N. Eisendrath.
8. Double Hernial Sacs, Dean D. Lewis, M.D., Chicago.
9. Intestinal Toxemia, M. M. Mack, M.D., Chicago.
10. The High Caloric Diet in Typhoid Fever, Joseph L. Miller, M.D., Chicago.
11. Arteriosclerosis, M. S. March, M.D., Peoria.

12. The Clinical Determination and Significance of Some of the Peripheral Signs of Aortic Insufficiency, Frederick Tice, M.D., Chicago.
13. Studies in Mixed Infection in Pulmonary Tuberculosis, R. T. Pettit, M.D., Chicago.
14. Fractures of the Skull. A Lantern Slide Discussion, Frederic A. Besley, M.D., Chicago.
15. The Surgeon and the Near Surgeon, J. W. Hamilton, M.D., Mt. Vernon.
16. Congenital Umbilical Hernia, with Description of a New Operation, Frank A. Palmer, M.D., Morris.
17. The Surgical Significance of Rheumatism, Alex. C. Wiener, M.D., Chicago.
18. Bone as a Nucleus of Vesical Calculus, Charles L. Patton, M.D., Springfield.
19. The Anesthetist as a Member of the Surgical Team, T. W. Gillespie, M.D., Peoria.

    Discussion by Arthur Dean Bevan.
20. *Cancer Symposium:*
    a. Cancer in Animals, Maximilian Herzog, M.D., Chicago.
    b. Cause and Prevention of Cancer, F. R. Zeit, M.D., Chicago.
    c. Early Diagnosis of Cancer, M. L. Harris, M.D., Chicago.
    d. Surgical Treatment of Cancer, S. C. Stremmel, M.D., Macomb.
    e. Treatment Other than Surgical, Arthur Dean Bevan, M.D., Chicago.

M. P. PARRISH, Secretary Surgical Section.
E. B. COOLEY, Secretary Medical Section.

—There are now 1,387 bakeries in the city; 1,093 of these are well lighted and ventilated and are classed as daylight bakeries; 294 are below the level of the street and are called cellar bakeries.

During the year 1910 there has been an increase of seventy-one in the number of daylight bakeries and a decrease of cellar bakeries. This has been followed by improved standards of cleanliness of 30 per cent. in the opinion of the inspectors, and this will unquestionably result in better health of employees and increased patronage of the public.

While the largest per cent. of improvement in the bakery situation was in 1909, the per cent. in 1910 has been very creditable and is really more than the figures indicate.

The important item during the last year has been the construction of sixty new bakeries from building plans approved by the Sanitary Bureau. This has insured healthful working conditions to the employees and wholesome food products to the public. The expense of maintaining inadequate, artificial light and ventilation appliances, as well as loss incurred from frequent flooding of cellars and the greater depredation of rats, have been important factors in discontinuing operations in such locations.—*From Bulletin, Chicago Department of Health.*

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY.

The regular monthly meeting of the Adams County Medical Society was held in Quincy, Ill., Dec. 12, 1910, with President D. M. Knapp in the chair. Others present were: Drs. Austin, Ball, Rafferty, Nickerson, A. D. Bates, Collins, Bearman, Gilliland, Pittman, Wessels, R. Meserve, Pendleton, Knox, Millem, Pfeifer, Shawgo, J. B. and Kirk, Koch, Brenner, Pierce, Bierne, Center, Rice, Johnston, Bloomer, Christie, Haxel, Schullian, Reticker, Ehle, Nichols, Irwin, Ericson, Blickhan, Williams, Ruth, Whitlock and Wells. The minutes of the last meeting were read and approved. Dr. Nickerson as chairman of the committee to meet with the board of education, in regard to medical inspection of the public schools, made a favorable report and stated that the plans for said inspection would soon be completed and announced by the board of education. The committee on quacks and their advertising was called upon, but had no report on hand. In connection a communication was read by the secretary, from the secretary of the State Board of Health, showing that it is possible to prosecute itinerant venders of medicine and nostrums under a ruling of the supreme court of the State. The communication was placed in the hands of the above committee, and also that of our legislative committee.

The matter of election of officers was the next consideration, and resulted as follows: President, J. B. Knox; first vice-president, J. H. Pittman; second vice-president, J. T. Brenner; secretary, Elizabeth B. Ball; treasurer, R. J. Christie; Censors: L. H. A. Nickerson, H. P. Bierne, D. M. Knapp.

The scientific program was abolished on account of the absence of those who were to take part. The time was taken up with general talk about coroner's inquests, etc. On motion the Society adjourned.

The Adams County Medical Society met in regular session Monday, March 13, at the Chamber of Commerce Rooms, with President J. B. Knox in the chair. Members present: Kirk Shawgo, Christie, Wells, Ball, Gilliland, Ericson, Center, Beirne, Nickerson, Williams, Mercer (W. E.), Pearce, Knaphaide, Gabriel, Pfeiffer, A. D. Bates, Werner, and the honored speaker of the day, Dr. Carl E. Black, of Jacksonville, Councilor for Adams and other counties in the district.

The various legislative bills, which are either in the House or Senate, were considered singly and action taken on each one. After luncheon at the Hotel Newcomb, Dr. Carl E. Black addressed the society on "The Relation of the Medical Profession to the Public Press." It was a very complete and interesting paper and enjoyed by all present. A rising vote of thanks was tendered to Dr. Black for his able address and to show our appreciation of his visit to us. On motion meeting adjourned.

ALEXANDER COUNTY

The Alexander County Medical Society held its regular meeting February 16, 1911, at Cairo, Ill. An unusually large number of the members were present and the program was an interesting one. The paper of the evening was read by Dr. G. H. McNemer on "The Thyroid Gland." This paper was fully discussed by all present. Interesting clinical cases were presented by Drs. W. F. Grimstead and A. A. Bondurant. Two new members have recently been added, and the affairs of our society are in a flourishing condition.

COOK COUNTY

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

Regular Meeting, Dec. 20, 1910

A regular meeting was held Dec. 20, 1910, with the president, Dr. Geo. E. Shambaugh in the chair.

CYSTS OF THE ANTRUM OF HIGHMORE

J. R. FLETCHER, M.D., CHICAGO

Dr. Fletcher called attention specially to the bony cysts of the alveolar process as the result of disturbed development of the embryonic tooth. They develop at the expense of this process and the cavity of the antrum, when large, pushing the anterior wall of antrum forward, sometimes raising the floor of the nose and depressing the roof of the mouth. These cysts are filled with fluid containing cholesterin and have an inner layer of pavement epithelium and an outer layer of connective tissue. They do not communicate with the nose or antrum and are found either closed and sterile or open and infected. The latter communicate with a carious tooth root. If the tooth is lost the cyst content may become caseous. These are the dentigerous cysts in distinction from cavities formed in the alveolar process caused by suppuration and lined with connective tissue only, dentary cysts.

The real antral cysts are membranous and occur within its cavity, are usually multiple and may be as large as the end of the thumb. These cysts are caused by chronic inflammatory disease of the antrum producing degeneration of the gland ducts. The glands themselves may participate in cyst formation. Multiple cysts may communicate with each other. The cysts of the ducts are small, lined with ciliated epithelium. In the large cysts the pressure changes the epithelium to the pavement variety. The cysts formed from glands are lined with cuboid epithelium. In a few instances endothelium lines the cysts. In such cases it is supposed that the cysts result from obstruction of lymph vessels. Membranous cysts occur from all parts of the antrum. Polyps occur only about the natural openings into the nose.

Fluid from the antrum never contains cholesterin. The only condition that is capable of producing an ectasia of the anterior wall of the antrum is the bony dentigerous cyst. The old term hydrops antri, applied to the cases presenting a bulging of the anterior wall of the antrum, is incorrect since fluid in the antrum could not cause such a bulging. When fluid in the antrum produces bulging this takes place in the membranous portion of the lateral nasal wall. The literature is full of confusion regarding bony dentigerous cysts, membranous cysts and the supposed condition of hydrops antri.

The diagnosis of dentigerous cysts is made by the history of long painless development, bony protrusion of the canine fossa, crepitation upon palpation, absence of communication with either the nose or antrum, and by the evacuation of fluid or caseous material both containing cholesterin.

In the treatment of bony cysts four things are to be considered: first, cure of infection, second, obliteration of cysts, third, correction of deformity of cheek and roof of mouth, and fourth removal of nasal obstruction. Heretofore operators have been satisfied to open the cyst, remove its lining and irrigate until discharge ceases. The following operation is suggested: removal of the bulging wall of the canine fossa through the mouth under the periosteum, taking away the lining membrane and making the bony cyst wall sterile; fracture the cyst wall protruding into the nose and mouth in many directions without perforation; push adhering bony fragments into the lumen of the cyst; pack the nose and insert hard rubber dental plate into the mouth; puncture the antrum and fracture the posterior cyst wall in several directions; introduce a long thin rubber tube like an elongated finger cot through one of the openings into the antrum; fill it with air or fluid in order to press forward the fragments of bone adherent to antral membrane; cover the denuded bony cyst fragments with the elevated periosteum

and close the wound leaving room only for the tube, which may be withdrawn after a few days.

DISCUSSION

Dr. O. T. Freer agreed with Dr. Fletcher that bulging of the buccal, temporal and orbital walls of the maxillary antrum did not occur as a result of empyema or catarrhal inflammation of its lining, but was an evidence of the presence of the bony cysts described by Dr. Fletcher. The nasal wall, however, Dr. Freer had found to be an exception in this respect and he even regarded its protrusion into the nasal cavity, in the thin portion of the wall in the middle meatus, as characteristic in many cases of empyema of the antrum. In one case, indeed, that of a twelve-year-old girl, the bulging involved not only the middle meatus but the entire nasal wall as well, causing it to press firmly against the septum, carrying over the lower turbinate with it, the whole condition simulating a bulging tumor, for which it was at first mistaken. The reason for this extreme bulging was a collection of inspissated pus which lay wedged in firm clots in the antrum. In this case the entire nasal wall, with the lower and middle turbinated bodies, was removed, throwing antrum and nasal cavity into one, the patient recovering completely.

Dr. Andrews referred to a case of antrum disease he operated upon three years ago. In opening through the canine fossa he came upon a very shallow but apparently healthy antrum. Having found unmistakable intranasal evidence of antrum disease, he punctured the posterior wall and found another and larger cavity containing pus in abundance. There must have been two antral cavities, separated by a complete partition, although he did not notice any communication between the anterior cavity and the nose or the posterior cavity.

Dr. Beck referred to the ease with which the diagnosis can be made by means of the radiogram. He finds that as a rule there exists a marked symmetry between the two antra and not the asymmetry referred to by Dr. Fletcher.

Dr. Fletcher (closing) stated that he agrees with Dr. Freer that the wall of the middle meatus may be bulging into the nose as the result of fluid in the antrum. When this exists it is confined to the membranous portion. Whenever the bone gives way one should suspect bony cyst. In Dr. Andrews' case he believes that the cavity first entered was a dental cyst. Regarding the radiograph as a means of diagnosis he does not consider this a necessary procedure, besides it is rather expensive. The fact that he has seen four of these cysts in a period of four years leads him to believe that they are much more common than one would judge from the number of cases reported.

ACTINOMYCES IN TONSILLAR CRYPTS

LORENZO N. GROSVENOR, M.D., CHICAGO

Dr. Grosvenor called attention to the fact that the ray fungus has its native parasitic habitat in the stalks of such grains, grasses and corn as cattle feed upon. In this manner the actinomyces gain entrance into the mouths of cattle, lodging in the crevices where they set up actinomycosis of the jaw, tongue, etc.

Macroscopically this fungus is found as a yellowish, hard, dense, fibrous nodule. Microscopically it presents a granular center with radiating, branched, thickly tangled mass of mycelial threads terminating in club shaped radiating forms.

Jonathan Wright[1] reports that the chief seat of infection in man is in and about the mouth, from there passing on into the thorax or abdomen. The actinomyces evidently become dislodged from their primary foci in the mouth and are passed on into the respiratory or digestive tracts.

The crypts of the tonsils prove to be a frequent nesting place for these fungi. In looking over the tonsils removed from one hundred patients, mostly children, Dr. Grosvenor finds the actinomyces in the crypts of the tonsils from fourteen cases. Here the fungi increase in number and size, crowding aside the walls of

1. Am. Jour. Med. Sc., July, 1904.

the crypts and by their irritation stimulate a great proliferation of the lining epithelial cells, with finger-like columns or masses of cells crowding into and even surrounding islands of lymphoid cells. This proliferation of epithelia forms a bulwark of protection against the invasion of the actinomyces into the tonsillar tissue. Immediately surrounding the fungi in the crypts are found many groups of swollen leukocytes with granular or fragmented nuclei. Such are the findings in the study of a large number of sections from the tonsils of the fourteen cases. Typical sections of these cases were demonstrated to the society by the microscopic-stereopticon.

DISCUSSION

Dr. O. T. Freer examined the slides shown by Dr. Grosvenor with the microscope and saw characteristic ray fungi, so that Dr. Freer is convinced of the correctness of Dr. Grosvenor's findings.

Dr. J. C. Beck thought that the fact that Dr. Grosvenor studied these cases with Dr. LeCount made this contribution valuable, although it is astonishing that so many cases of actinomycosis were found. If such a state of affairs really existed there ought to be more cases of actinomycotic infection of the neck. The epithelium lining these crypts is, as a rule, very much degenerated and helps to form a mass which fills in the crypts. The leptothrix is frequently found in these masses and should not be mistaken for the actinomyces.

Dr. H. Kahn inquired as to the relative age of the patients, their occupation and whether any cultures had been made from the tonsils; whether the cases had been selected or represented the average case.

Dr. Andrews presented a case of disease of the tongue he had seen some years ago which was later found to be actionomycosis. When he saw the case the tongue was swollen, deeply furrowed. indurated and painful. He was unable to ascertain the cause of the trouble at the time, but the case finally came under the care of Dr. Tenney who made a diagnosis of actinomycosis. Under Dr. Tenney's care the distressing symptoms had entirely disappeared although the tongue is still furrowed and shows some evidence of disease.

Dr. A. C. Tenney said that the condition of the tongue in this case was extremely distressing. There were many deep furrows, it bled easily and seemed to be covered with granulation tissue, presenting an appearance which had led to the diagnoses of tuberculosis and also of malignant disease. When he first saw the case he was convinced that it was one of overgrowth of granulation tissue, such as is seen in the conditions classed under the head of granulomata; syphilis, tuberculosis, actinomycosis, and the early invasions of malignant growths. Syphilis was excluded by the history and the fact that a long anti-specific treatment had availed nothing. Tuberculosis was excluded by the lack of secondary infection, absence of fever and other symptoms. Actinomycosis was suggested by the nodules in the salivary ducts, which it has been shown offer the least resistance, after the tonsil, to this disease. In this case the invasion was very apparent and Dr. Tenney thought it was a case of salivary lithiasis. However, there were also nodules in the glands which pointed to a possible actinomycosis. Dr. Adolph Gehrmann examined the specimens and found the first and second to be negative. Then the surface of the tongue was scraped in the morning before anything had entered the mouth and the actinomyces were found in the scrapings. Another confirmatory sign was that when the patient was under alterative treatment she improved, while under mercurial treatment she suffered. Under mixed treatment there was no change. The problem was how to give her sufficient iodin to control the condition without getting any of the deleterious effects of the mercury, potash or sodium. Therefore, he resorted to the internal administration of iodin in organic combination and the patient has been kept in a very comfortable condition. The tongue is now fairly smooth although there is still some infection present. The local treatment consisted in the application of potassium iodid by electrolysis. When this failed to give the desired results he resorted to the use of copper with a mild galvanic current. Under this treatment, covering a period of about six or eight months, the general health of the patient improved and the local condition is markedly better. The patient is clinically well.

Speaking of Dr. Grosvenor's paper Dr. Tenney said that Dr. Grosvenor evidently assumed that the tonsil is a resisting organ. His observation would lead him to assume the opposite attitude, that the tonsil has the least resistance of any, because the crypts furnish a splendid culture ground in which the actinomyces develop to such an extent that they assume the rod formation and subject the patient to the danger of systemic involvement. The great danger in these cases is extension to the intestinal tract and lungs, and he wondered whether a case of tuberculosis reported by Dr. Grosvenor was not one of actinomycosis of the lung. Osler says that when one finds abscesses forming sinuses, the pus containing white or yellowish bodies, actinomycosis should be *suspected*. It is important to make an early diagnosis of actinomycotic infection in these cases so that when they come to the specialist and the tonsil is the primary seat of the disease, a tonsillectomy may be done immediately, thus saving the patient from systemic infection.

Dr. Grosvenor (closing) urged that the members make an examination of his microscopic slides, inasmuch as the details could not be seen so well in the lantern slides. He has been in the habit for ten years of working up microscopically all the tonsils which he removed himself. He had noticed these fungi in the tonsils and had regarded them as actinomyces, without, however, taking time to study the subject. However, when careful examination was made he found actinomyces in the crypts of 14 tonsils out of 100 cases studied. Most of these patients were children or young adults. He did not know that these were cases of actinomycosis until after the tonsils had been removed and examined. Therefore, he did not pay so much attention to the clinical phase of the subject. However, in looking up the history he found that in every case there had been a severe tonsillitis a month or two before the removal of the tonsils, and that there had been previous attacks. Metchnikoff and others have considered the actinomyces related to the tubercle bacilli because branching forms of the latter have been found in sputum, and some observers have gone so far as to say that the tubercle bacillus is one of the stages of the actinomyces. The tonsils are the best incubators for bacteria of all kinds. Jonathan Wright, in 1904, showed the tonsils themselves did not become involved in the actinomycotic process but that systemic involvement may occur.

DEVELOPMENT AND STRUCTURE OF THE TEMPORAL BONE

GEORGE W. BOOT, M.D., EVANSTON, ILL.

Dr. Boot gave a lantern slide demonstration illustrating the state of development of the temporal bone during different periods of life from the ninth month of fetal life to the adult bone, also several sections of adult bones showing the relations of the various parts. The young bones showed the exit of the facial nerve opposite the middle of the annulus tympanicus and the danger of its being injured if the ordinary incision for mastoiditis were made in early infancy. They also showed the absence of a bony external auditory canal. Sections of the young bone showed the location of the antrum tympanicum wholly above the horizontal line running along the lower border of the zygomatic process, but section of the bone from a two-year-old child showed that the antrum had assumed its adult position below the zygomatic process.

The absence of the mastoid apophysis was shown in the young bones. Attention was called to the direction in which the annulus tympanicus developed, which was not outward, in a direction at right angles to the plane of the ring but rather nearly in the plane of the ring, the development proceeding most rapidly at the anterior and posterior tubercles and at the lowest point of the ring. In cases where this last point of development did not proceed as rapidly as the others there is left a congenital defect in the anterior wall of the bony external auditory canal.

The location of the petro-squamous suture was shown as it runs through the tegmen of the antrum and tympanum and just below the antrum tympanicus on the outer surface of the bone.

DISCUSSION

Dr. George E. Shambaugh pointed out that this demonstration of the developing temporal bone made quite clear a number of conditions well known clinically. One of these is the readiness with which an otitis media in an infant produces changes back of the auricle with the frequent development of a sub-periosteal abscess. This is accounted for by the fact that the antrum tympanicum in an infant lies very close to the outer surface of the temporal bone. The bony shell of the antrum in addition to being very thin is quite porous. The petro-squamosal suture in the infant makes still more free the communication between the interior and the outer surface of the bone. These anatomical conditions also explain why the simple Wild's incision accomplishes so much more in an infant than it does in an adult. In fact by a simple Wild's incision one has often the result of a Schwartze operation in an infant.

Another clinical fact which is explained by the anatomical preparation exhibited is that in an infant any manipulation of the outer ear causes a great deal of pain in cases of acute otitis media, whereas in the adult this does not occur. The explanation lies in the fact that in the infant there is no bony meatus and the membranous part of the external meatus is attached to the ostympanicum to which the drum membrane is also attached, and any manipulation of the auricle is bound to disturb the structures at the bottom of the canal which are inflamed in acute otitis media.

Dr. Boot (closing) stated that in order to enter the antrum through the petro-squamosal suture it is necessary to pass in an oblique direction upward, that passing directly in a horizontal plane enters often below the antrum.

HISTOPATHOLOGY OF ETHMOIDITIS

J. C. BECK, M.D., CHICAGO

Dr. Beck demonstrated by means of microscopical slides thrown on the screen the histo-pathology of chronic ethmoiditis with special reference to the paper read by Dr. Marquis at the last meeting, in substantiating the existence of at least two distinct pathologic types of the disease. To some members, not being convinced of the existence of the pathologic entity as the hyperplastic form, which has been so thoroughly studied by Uffenorde abroad and Skillern in this country, Dr. Beck believed that he could demonstrate conclusively the existence of this form of ethmoiditis. Not only pathologically, but certainly clinically, most observers have seen ethmoidal disease with and without the presence of pus. Polypi may and do exist in both types of ethmoidal disease, but the polypi also differ in their histo-pathologic consistency. The distinction of these two forms of ethmoiditis is also important from the therapeutic point of view, as well as the course of the affection. The one great difference in these two processes is essentially this: that in the suppurative form we have an inflammatory condition with the increase in the tissues due to such changes, including the epithelium, subepithelial tissue, the areolar tissue and blood-vessels. The glands are not much destroyed early in the process. The bone is frequently involved in the inflammatory process and later often becomes necrotic while in the non-suppurative form the increase in the tissue is principally a degenerative process of a myxomatous type. Here the glands are markedly changed in atrophy and cystic or myxomatous degeneration. Inflammation is not present to any degree. There are also various degrees of changes in both the varieties, as Dr. Freer has mentioned at the last meeting of the A. M. A. The changes are a matter of degree of either inflammation or degeneration and destruction. As to the etiologic factors Dr. Beck could say nothing positive but was inclined to believe that both varieties were due to a process of infection. In the non-suppurative form there existed most probably at one time infection which was of a lower form of microorganism and this continued as a low grade of inflammation and degeneration. That deflection of the septum and ridges on the same which come in close contact with the middle turbinal may act as an irritative cause or shut off the ventilation and drainage of the ethmoidal region and bring about the so-called hyperplastic

changes with the whole coterie of symptoms can easily be accepted, as Uffenorde and others show.

The specimens shown were as follows:

LOW POWER 1/3.—A. (HYPERPLASTIC) NON-SUPPURATIVE ETHMOIDS:

CASE 1.—Early involvement; 1. Middle turbinal; 2. Uncinate process.

CASE 2.—Later involvement: 1. Polypus; 2. Middle turbinal; 3. Ethmoidal curetments.

CASE 3.—Previously operated and reoperated on: 1. Polypus; 2. Remains of middle turbinal; 3. Ethmoidal curetments.

B.—SUPPURATIVE ETHMOIDITIS:

CASE 1.—Three months standing: 1. Middle turbinal; 2. Ethmoidal curetments.

CASE 2.—Five years standing suppuration. Previously operated upon and reoperated on: 1. Polypus; 2. Middle turbinal; 3. Ethmoidal curetments.

HIGH POWER 1/9.—Non-suppurative: 1. Polypus; 2. Middle turbinate; 3. Ethmoidal curetments.

SUPPURATIVE: 1. Polypus; 2. Middle turbinate; 3. Ethmoidal curetments.

Dr. Beck stated that the close study under the microscope would bring out the points made much better than when these preparations are thrown on the screen and that in the near future he would present this subject more advantageously with illustrations.

DISCUSSION

Dr. Freer said that Dr. Beck's specimens were a beautiful display of the pathologic histology of ethmoiditis and were a valuable confirmation of what had been found clinically in operations. The proof of the existence of chronic inflammatory changes in the bone, by Dr. Beck, seemed especially important to Dr. Freer.

Dr. Ballinger said that he has always believed that the suppurative and non-suppurative types of ethmoiditis had the same etiology. In the suppurative type suppuration is present because the infection is more virulent. In the hyperplastic type suppuration is absent because it is a lower grade of infection. He believes the two conditions call for the same treatment although the non-suppurative may not require as radical treatment as the suppurative type.

Dr. Beck (in closing) stated that various conditions, such as ridges, spurs, deflections and the like, cause an irritation which is followed by an inflammation, but that is not the sole difference between the suppurative and non-suppurative types of ethmoiditis. The non-suppurative type is a degenerative process of the mucosa in which by pressure only will there follow changes in the bone. The suppurative variety is an infectious process which eventually results in bone necrosis. In one, extensive treatment will lead to chronic suppuration of the surface, whereas in the non-suppurative type possibly a middle turbinectomy will prevent further degenerative changes and result in a cure.

TRANSILLUMINATION OF THE MASTOID

Dr. Shambaugh exhibited an apparatus for transillumination of the mastoid. This consisted of a small bronchoscopy lamp on a stiff holder about 6 inches long. The holder is covered by a heavy rubber sheath, from the end of which the lamp projects. The rubber casing is large enough so that when the lamp is placed in the external meatus the casing will occlude the outer opening of the meatus and prevent the escape of light along the walls of the canal. Without this occlusion of the meatus the illumination of the mastoid would often be obscured by the escape of light along the wall of the meatus. He believes that this method of transillumination of the mastoid by placing the lamp in the external meatus will prove superior to the method described several years ago by Dr. Andrews where a lamp is placed over the mastoid while an inspection of the meatus is made.

Dr. Shambaugh pointed out that transillumination of the mastoid has distinct limitations, just as the same test when applied to the nasal accessory sinus. In the first place the degree of illumination of the normal mastoid depends on the extent to which the process is supplied with pneumatic spaces. In a process free from air cells the illumination will be absent. Fortunately, the type of process found on the two sides is usually the same, so that if one mastoid is pneumatic the other will be too. The comparison between the two sides when disease is suspected on one side will therefore be of great assistance. In cases of chronic suppurative otitis media the mastoid is frequently the seat of osteosclerosis, with an absence of pneumatic cells. Here the mastoid will of course be dark. In these cases examination of the ear by other means will perhaps give us more definite clues as to the existence of conditions which may lead to serious complications and for which an operation is indicated.

It would seem that this method of examination will be of the greatest aid in acute cases of unilateral otitis media, where there is an absence of the classical symptoms of mastoid abscess, such as the characteristic change in the external meatus or the development of tenderness over the mastoid, but where especially the persistence of discharge suggests a mastoid abscess. The presence of a shadow on the mastoid in the early stages in this type of case cannot be accepted as a positive indication for an operation, because the occurrence of congestion in the mastoid cells usually present in all cases of severe acute otitis media will also produce a shadow even in the absence of any softening of the bone. The lamp requires, of course, a rheostat and a suitable cable. The entire apparatus is simple and can be adjusted by any one, or it can be secured complete from the firm of A. B. Mueller of this city.

Dr. J. Holinger thought that this method of examination would prove to be of value in chronic cases of mastoiditis.

DISCUSSION

Dr. A. H. Andrews said that there are many pathologic conditions and some normal ones which will show a shadow in the mastoid. It is not always easy to interpret the findings. He has watched acute cases and has seen a shadow come as the case progressed and disappear as the case recovered. A shadow, he said, is not always an indication for mastoid operation. In the cases that seem to be passing from the acute or subacute into the chronic stage, where the patient complains little, but does not progress as he should, transillumination is a very valuable addition to other methods of examination of the mastoid, but the findings in all cases must be interpreted in the light of experience and reason.

Dr. Shambaugh states that he believes the method will be of more positive assistance in the acute cases verging on what might be termed a subacute condition, but without positive evidence of mastoid abscess. An article by Gustav Dintenfass in the last number of the *Archiv. für Ohrenheilkunde* discusses this method of transillumination of the mastoid.

In the case of chronic suppuration from the middle ear Dr. Shambaugh suspects that we will be able to place more confidence in other methods of examination to detect the existence of involvement of the temporal bone, with or without the invasion of epithelium from the meatus and the formation of cholesteatoma, which constitutes our chief indication for a mastoid operation, provided no symptoms of serious complication are present. We, of course, recognize now that a larger number of cases of chronic suppurative otitis media, where there may be periods of acute exacerbation of discharge associated with each fresh coryza, may not in themselves be any more dangerous to the individual than the attack of coryza, provided, of course, the disease is one that involves the mucous membrane alone and does not extend to the bony structure.

Dr. Andrews feared that the last statement might give the general practitioner too great a feeling of security in allowing cases of chronic suppurative otitis media under his care to run on indefinitely, employing local treatment. Chronic suppuration in the ear is far too serious to be taken lightly by the patient

or the practitioner, and it would be a mistake to allow the impression to go out that these cases are not serious.

Dr. Shambaugh did not wish to convey a wrong impression regarding the situation in these cases of chronic suppurative otitis media. The point he wished to express was simply this: that we are now able to make a rather sharp distinction between cases of chronic suppurative otitis media where the process is limited to the mucous membranes and those where the bone itself is involved. Whereas in the latter cases we recognize a process that may at any time lead to serious complication, in the former case where the process involves merely the mucous membrane, we do not fear any sudden complication. The statement made years ago by Dr. Wild, that in chronic suppurative otitis media we never can tell how, when or where the process may end, we restrict now to those cases where the process has invaded the temporal bone, and it is therefore in these cases where we are justified in advising a radical mastoid operation. So long as the disease does not extend beyond the mucous membrane of the middle ear no complication need be feared and no radical mastoid operation is justified. It is one of the triumphs of modern otology that to-day we are able to differentiate between these two classes of running ears.

CHICAGO MEDICAL SOCIETY

Regular Meeting, Jan. 25, 1911

A regular meeting of the Chicago Medical Society was held, Jan. 25, 1911, with the president, Dr. Alex. H. Ferguson in the chair. Dr. Clarence W. Leigh read a paper on "Carl Spengler's 'I. K.' Treatment in Tuberculosis."[1] Dr. Ernest Lackner read a paper on "Tuberculosis in Children." Dr. Hermann J. Achard exhibited and demonstrated various tuberculins. Edward Gudeman, Ph.D., read a paper on "Raw and Pasteurized Milk and Milk Serums."[2]

Regular Meeting, Feb. 1, 1911

A regular meeting of the Chicago Medical Society was held Feb. 1, 1911. In the absence of the president, Dr. Fletcher called the meeting to order. Dr. B. C. Corbus read a paper on "Observations on Twenty-Eight Cases Treated with the Ehrlich-Hata Remedy (Salvarsan)." Dr. Carl Wagner read a paper on "Ehrlich's 606."

DISCUSSION ON THE PAPERS OF DRS. CORBUS AND WAGNER

R. H. Herbst: From what we have heard this evening, from the voluminous literature on this subject, and from personal observations, I think most of us are well satisfied that salvarsan will occupy a high position in the future treatment of syphilis; however, I am just as well satisfied that it will not be used as a routine form of treatment. Admitting that the spirochetes promptly disappear after its use, also that the Wassermann reaction becomes negative quite early, and again that the manifestations of syphilis, especially mucous membrane lesions, disappear more promptly than we see with mercury, still these results are not permanent, and in order to make them so, this treatment will have to be supplemented by mercury.

After using this remedy we find that the spirochetes disappear from the lesions in twenty-four hours in some instances. This is remarkable; however, we must not forget that they have been known to disappear in forty-eight hours following a single injection of metallic mercury.

What is the significance of the negative Wassermann reaction in cases treated with salvarsan? Does it indicate that these patients are not actively syphilitic, or is it due to the presence of the arsenic preparation? I am satisfied that the latter is true in most cases, because I have repeatedly seen patients with marked recurrences give a negative Wassermann reaction. We see the same thing with mercurial treatment, viz., just as long as an individual is well saturated with mercury his Wassermann reaction will be negative, although he may be actively syphilitic.

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1. For text of paper see p. 461.
2. For text of paper see p. 417.

In our early enthusiasm over some of the results obtained with salvarsan we must not forget the many marvelous results accomplished with our old methods of treatment. Few will question that salvarsan has a strong destructive action on the spirochetes, but does it destroy the few latent, dormant spirochetes we so frequently see producing the parasyphilides, after many years of apparent health? This is very doubtful, and that is why I would strongly urge that we supplement this treatment with mercury, knowing that mercury not only destroys the spirochetes, but also increases the defenses of the human organism, and it is this constant strengthening of the defenses, which ultimately takes care of the treacherous latent spirochetes.

I think that the indications for the use of salvarsan are as follows: in cases of early syphilis, when we are anxious to carry the patient over the so-called "highly contagious stage" as rapidly as possible, and again in cases of late syphilis, when an emergency action is required, but in every instance I strongly believe in supplementing this treatment with mercury and the iodids.

Archibald Church: My interest in this remedy concerns its application to the late manifestations of syphilis on the nervous system—locomotor ataxia, paralysis and other degenerative tendencies in the spinal cord.

It is particularly in these cases that salvarsan is said by some to be contraindicated, the opinion not being based upon facts, apparently, but growing out of the fear that it might have some ill effects on a nervous system presenting degenerative symptoms. As has been said here to-night, this fear is probably without foundation and I have not allowed it to govern me in my work.

I have now 27 cases of general paresis or combinations of tabes and paresis, locomotor ataxia, etc. They all showed positive Wassermann and the fact became established that there were positive or latent spirochetes in these patients. So the idea seems to be obtaining that there is some latent poisoning from these spirochetes, not enough to make it really active, but just enough to keep up a chronic poisoning, hence the value of any remedy which will stop it.

My hope in using salvarsan was not to do away with the atrophic condition in the spinal cord, but to put a stop to the poisoning and, if possible, bring the locomotor ataxia to a pause. The results are too recent to say that it is positive, but with Dr. Murphy, I have been able to give it in some presenting these latent manifestations. It is too long after the beginning treatment to give you a complete clinical history, but some few points may be of interest to you.

One gentleman came to me with locomotor ataxia. He was troubled with severe gastric crises so that he could not take three meals a day and had not been able to for a long time. Many days would sometimes pass without his being able to retain a single meal. Twenty months ago I saw him. He had an enlarged left pupil, lightning manifestations of pain in the lower limbs. He was sent home, of course, for mercury treatment because salvarsan was not then being exploited. (I say "exploited" advisedly, because you cannot say anything else with reference to a preparation which has been presented as this one has. Every time I take out a package and see the words "patent registered" in red letters it gives me a kind of chill. The price is cheap enough, I am sure, for a remedy of its value, but I do not hesitate to say that I cannot approve of the way in which it is presented.)

When the man came back last fall his left pupil was dilated ad-maximum; was stationary to light in all manifestations. I gave a dose of 60 c.c. of salvarsan. The next day the man took three square meals; and for seven consecutive days he took his meals regularly. Forty-eight hours later the pupil (dilated as described above) contracted down to the size of its fellow but still showed some difficulty in reacting to light. By the end of the week it widened slightly and has remained so ever since, but it is ever so much better than it was when I first saw it.

In another case the cramp in the abdomen was sometimes such that the contents of the bowel and bladder were extruded. In twenty-four hours this had all subsided and the clonus disappeared. He has been so liberated from the spas-

modity that he is able to walk about at home and on the streets. How permanent this will be, of course, it is entirely too soon to tell.

I had another case of a woman who was sent to me from the Mayo Brothers. In her case I found the Wassermann positive not only in her but in her husband. Her mind was so affected that she could not tell her age, her name, the names of her children or how many there were. The only thing she knew anything about were the objects under immediate observation. In four or five days after the introduction of salvarsan she could carry on a very reasonable conversation. How lasting this will be we can only speculate.

Another case: a man who some years ago presented incipient indications of general paresis. He improved somewhat upon mercury, got to the point where he could transact a little business, but did not get any better. He showed the Argyll pupil, both knee-jerks being absent. Now, ten days after his first injection he has both knee-jerks present, the Argyll pupils are not exactly that; they do respond in a slight degree to light.

Another instance is that of a young merchant who got rather out of sorts with his business. He presented a case of well-established paresis. Now he has regained his pupillary action and all his mental vagaries have disappeared.

These conditions, however, are so common that the sequence cannot be established until we have had them under observation for a much longer period.

I have seen some untoward results. In one case of locomotor ataxia, presenting blood and albumin in the urine (the majority of these cases have no albumin, so that the presence of albumin always alarms me), however, there was positively no discomfort at the site of the injection, which has been intra-muscular.

One case of tabes lost one eye and the other was so diseased that he was told he might go blind. The injection of salvarsan did not disturb his vision in any way, but it did disturb his heart very alarmingly. The pulse ran up to 140.

In one case of paresis the first injection gave him so much relief that he was anxious to have the second. The second produced such disturbance of the cardiac action that he has been on his back ever since!

In all of these patients, we must remember, we have individuals who are subject to nervous and cardiac accidents and I presume we shall get into trouble, but the great point is: have we here something with which we can stop the progress of tabes and general paresis in some cases?

I express the hope that it is so. I would not wish to be quoted as saying that it is so, but I hope it is; however, I do not believe my statistics are elaborate enough to give me any basis for an opinion, but I am optimistic and, as the poet Eugene Field says: "It is better to hope than doubt."

Jos. Zeisler: I wish to record myself as a thorough believer in the therapeutic efficiency of salvarsan. From what I have seen abroad and from my limited personal experience, in private practice, I may say that I have nothing to regret and a great deal to be thankful for. I have seen some effects which might be called almost marvelous: results which I have not at any time before, in a fairly long experience, been able to see accomplished with mercury or iodids.

A great deal has been said to-night, about the technic of the injection, and to some of you the complications and apparatus surrounding it, may mean unsurmountable difficulties. That the intravenous method will ever become popular with the profession at large, seems to be very improbable. This method means before all, hospital care, and therefore, is not practical at all times. Were all cases requiring salvarsan treatment placed in a hospital, there would be no room in all our hospitals for any other class of cases.

The original hope of a *sterilizatio magna*, a cure by one single injection, has long since been abandoned even by Ehrlich himself, who now speaks of two or three injections and also recommends other adjuvant treatment; under such circumstances, any plan which involves danger, which has repeatedly caused death, which is exceedingly complicated, cannot recommend itself for routine application.

What I have seen of the Wechselmann method is such that I do not believe I should ever use it. Two days ago, I saw a patient who had received such an

injection last September and who still has a lump on his back just like those shown here to-night, and I would rather warn you against that method.

I have repeatedly used, but always in a hospital, the alkaline solution. That method fulfills the indication of a rapid dissemination of the remedy; although when conditions should demand urgency we should select the intravenous method.

Subcutaneous injection of the solution is not very painful, not dangerous and usually as effective as the intravenous because it also means fairly quick absorption. There are, however, drawbacks to it. There is usually a rise in temperature and pain after the injection of the remedy. In one of my cases, there was persistent vomiting which lasted three days.

There has been nothing said here to-night of a form of injection which seems to me deserving of a word because I believe it will remove the remedy out of the hands of the privileged few and place it within the reach of the general practitioner. That is the method of injecting an oil emulsion. It is not quite original with me, having been used in one form or another by Kromayer, Levy, Bing and others. I have simplified it by using sterilized alboline as the vehicle. I have used a number of such injections and can safely say that the results have been very good—as good as I ever wish to see. When I say to you that in a case injected a few weeks ago in a medical student, who had an ulcerated chancre and an enormous inguinal bubo, the emulsion caused a healing over of the chancre in two days and a marked decrease of the glandular swelling, I am not stretching the truth. In another case with persistent mucous patches on the tongue, these disappeared promptly and after three weeks the patient is entirely free from any signs of lues.

Injection with this emulsion is perfectly painless. The patient has a slight uncomfortable feeling, but goes about as usual. I have given several of them in my office and, so far, have nothing to be sorry for. The medical student referred to, insisted upon having it that way because he did not wish to cause notoriety. The injection was given at my office and so good were the results that I have since repeated what first seemed somewhat bold in several instances. I believe it is the method which is destined to become popular.

As far as ultimate results are concerned, especially the prevention of nervous phenomena, it is impossible to predict anything as yet. I believe we have in salvarsan a very valuable remedy. Ehrlich to-day, over his signature, recommends its use in connection with mercury. He advises attacking the spirochetes from all possible points. Time only will show what the results will be. A discussion like the one to-night, is quite timely, and I believe it will be wise to have a discussion of this sort again in a year and then again in two years. Whether we shall give it a thought in five years from now, no one can tell.

Dr. Fletcher: For fear one of Dr. Church's remarks may be misunderstood I wish to say that I believe when we are dealing with a man's reputation who stands as high in his profession as does Ehrlich we should consider the matter from all sides before we pass judgment on what he has done. He patents his preparations because abroad it is ethical to do so. Had he not done so he would have been in danger of not being allowed to proceed. What income he gets from this he immediately turns over to his university. I have heard and read a great deal of criticism of Paul Ehrlich. It is a well-known fact that he is an infant in the ways of the world and I doubt very much if he cares for much more than enough to eat and a place to live.

Dr. O'Shea: I just wish to report one case which I had in December. Two years ago he had had a sunstroke from which he never fully recovered and I think it proved the foundation for his syphilis which followed. I took him to St. Lukes' and it took us a week to make a diagnosis. I had given him Fowler's solution for two months before he went to the hospital. While he was there we gave him iodids and mercury intravenously. He was to be sent to the Detention Hospital at Dunning. I interceded for ten days longer. At the end of the ten days he was brought up again and I had another ten days added. He could not walk and had beginning tabes, and commencing tumor of the brain. I gave him

"606" three weeks ago. To-day he is out working, almost the same as he was three years ago.

I gave another injection last night with no rise in temperature resulting. Urine normal. I gave the injection in divided doses in four places in the back and this morning I could not find a single induration.

That was one of the most remarkable cases I have ever seen. I do not know how it will ultimately turn out, of course, but he was saved from the insane asylum for a time at least.

B. C. Corbus (closing the discussion on his part): One word about injection: I have from the first used the alkaline solution method. I know it is somewhat painful and I have no doubt but that Dr. Zeisler's method can be used more conveniently, but whether it is as efficient or not we are not able to judge at present. I have injected eight cases in my office. Four of them went into shock following the injection, but they were cases that were enemic and not in good physical condition. In one patient, it was given in the subscapular region. So severe was the shock in this patient that I thought he was going to pass away. I have only given it in the office at the entreaty of poor patients and still believe it is dangerous.

Dr. Carl Wagner (closing the discussion): In regard to office treatment with "606," I would like to say that Weintraut in Wiesbaden, as well as many others, give even the intravenous injection in the outdoor clinic and permit the patients to return home immediately and resume their work next day. While this may perhaps be done with impunity in most of the cases, I feel sure that we must be prepared for some unpleasant surprises, which latter was forcibly impressed upon my mind through an incident which happened during a recent visit of mine to the Rockefeller Institute. Dr. Swift, in charge of the syphilitic patients of the institute, gave a "606" injection to a strong, robust-looking man, 35 years of age, who showed neither nervousness nor any other symptoms indicative of any special danger. The injection was given into the lumbar region which Melzer, of the Physiological Laboratory of the Rockefeller Institute, had demonstrated through very ingenious experiments, to be the region of quickest absorption; immediately after the injection the patient went into profound collapse and came out of it only after hard work about the same way as persons with epileptic conditions wake up from an epileptic seizure. This repeated itself three times after which the patient, quite feeble and covered with perspiration, regained full consciousness, but complained of very severe pain radiating from the point of injection in the lumbar region down through the hypogastric region into the left testicle. In regard to the position which the iodids, mercury and "606" hold respectively to syphilis, especially to the more inveterate forms, I believe that mercury and "606" are the real active agents which kill the syphilitic cause, while iodid, just the same as fibrolysin, simply opens the doors of the resistant foci for the lymphatic and blood current to convey these agents into them.

JACKSON COUNTY

The January meeting of the Jackson County Medical Society was held in the parlors of the Jackson Club at Murphysboro Thursday, Jan. 19, 1911. Members present: Drs. Carter, Sabine, Ormsby, Horstman, Grizzell, Molz, Riseling and Essick, of Murphysboro, and Dr. McAnally, Carbondale; visitors: Dr. J. L. Wiggins, E. St. Louis, Ill. Dr. J. L. Wiggins read a very interesting paper on some of the "Errors in Surgical Diagnosis of Abdominal Disorders." The paper was freely discussed by all present. Dr. C. E. Riseling reported two cases of tetanus that had been under his care. Both were discussed by those present. Dr. Wiggins was tendered a rising vote of thanks by the society.

Adjourned. RAY B. ESSICK, Sec.-Treas.

LAKE COUNTY

The meeting of the Lake County Medical Society was held in the audience room of the library, Waukegan, Ill., March 20, 1911. The chair was occupied by the president, Dr. M. E. Fuller.

A most interesting address was given by Dr. Sidney D. Wilgus, superintendent of the Hospital for the Insane, Elgin, Ill., on the subject "Management of Hospitals for the Insane." The paper was a most careful review of the résumé of hospital management dealing with the methods of handling departments, the difficulties met with, and asked for the cooperation of the taxpayers in bringing about better conditions. Two facts were brought out which was a revelation to the members of the county society. These were: (1) the fact that the institution, as are all other like institutions of the state, is extremely overcrowded; (2) that the state appropriation is inadequate to supply the best services. Not only is the entire corps of employees changed every year but an inferior class of employees is obtainable with such salaries as are offered. A vote of thanks was given Dr. Wilgus for his most able paper which was freely discussed by the members present.

It was moved, seconded and carried that Dr. Wilgus' paper be published in the local papers as a matter of education to the public. Dr. Wilgus then left to catch the train to Chicago.

The minutes of the last meeting were read and approved. The applications of Drs. George M. Billmeyer of Zion City, M. Herschleder, Waukegan, and C. W. Talbott of Lake Villa, all having been approved by the board of censors, were voted on by the society and they were unanimously elected as members.

Dr. W. H. Watterson was chosen as delegate to the State Medical Society and Dr. J. C. Foley as alternate. It was suggested that all the members of the society that possibly could attend the state meeting at Aurora May 16, 17 and 18 in accordance with the kind invitation sent by the Fox River Valley Medical Society, which was read.

The chair then appointed as the board of censors for the coming year Drs. L. H. Tombaugh, W. S. Bellows and F. L. Gourley.

The matter of House Bill No. 380 concerning the recognition of osteopathic medical colleges was then taken up for consideration and it was voted that the secretary register the protest of the society against this bill to their member of the Judiciary Committee, the Hon. Edward D. Shurtleff.

The matter of amount of the dues for the year then came up and because of the entertaining of some neighboring societies at the next meeting it was voted that the dues for this year be $5.

A committee on entertainment to arrange for the next meeting was then appointed by the chair. They were Drs. C. E. Daniels, W. C. Bouton, Frederick Ludwig, H. B. Roberts, Martin E. Fuller, J. A. Turner and L. H. Tombaugh.

The matter of asking for an appropriation of $100,000 from the state for equipment of the medical department of the University of Illinois was then taken up and it was voted that the secretary be instructed to register the endorsement of the society on this measure.

Those present were: Drs. Fuller, Bellows, Foley, Kalowsky, Gourley, Gavin, Daniels, Ludwig, A. O. Wright, Turner, H. B. Roberts, Tombaugh, Bouton, Jolley, Holm, N. J. Roberts and Watterson, besides several invited guests including Supervisor Conrad and City Attorney Orvis. Adjourned.

W. H. WATTERSON, Secretary.

MADISON COUNTY

The Madison County Medical Society met in the Washington Theater in Granite City March 3, 1911. In the absence of the president, Dr. E. C. Ferguson, vice-president, presided. The following members were present: Drs. Hastings, Zoller, Johnson, J. W. Scott, Barnsback, Threadgill, Sims, Dorr, Kerchner, Harrison, Yerkes, Burroughs, Luster, Theodoreff, Hirsch, Ferguson, W. H. Grayson,

Wedig, Schroeder, Seebold, Schreifels, Riley, R. B. Scott, Kiser, Cowan, Everett, Tulley, Gwynn, Pfeiffenberger, Spitze, Binney and E. W. Fiegenbaum. A resolution endorsing the movement to ask the legislature for an annual appropriation of $100,000 for the Medical Department of the Illinois State University was read and unanimously adopted, and the chair appointed the following committee to assist in presenting this matter to the state legislature: Drs. Fiegenbaum, Yerkes, Harrison, Everett and Tulley.

Dr. R. D. Luster of Granite City, read a paper on "The Value of the X-ray in Diagnosis." It was a very interesting paper showing the various uses of this agent in making diagnoses, both in a medical and surgical way. The paper bore evidence of considerable study and was highly appreciated by all. The discussion was opened by Dr. Zoller and continued by Drs. Ferguson and Harrison. The whole theme was finely illustrated by large stereopticon pictures, making altogether a very valuable contribution to the work done very recently by this society. On motion it was decided to hold our next meeting at Edwardsville on April 7, 1911.

E. W. FIEGENBAUM, Sec'y.

M'LEAN COUNTY

The McLean County Medical Society met Feb. 2, 1911, at the City Hall, Bloomington, Dr. E. Mammen, president, in the chair. After a favorable ballot on two new members and other routine business, the secretary read for the edification for those present a report he had prepared as district councilor, showing present membership, 72; gain 5; no removals and no deaths. A letter from some members living outside of Illinois was read, inquiring whether they would be required to pay $3.50 total yearly dues. In answer the following resolution was introduced and carried: That members outside of Illinois be required to pay the same dues. A motion also prevailed to appoint a committee of three to frame a by-law applying to outside members. The essayist of the evening being absent reports of cases were in order.

Dr. E. L. Brown reported the following case: On March 16 I was called to see a patient with severe pain over gall-bladder. He had a slight fever, was a little jaundiced, had severe pain and sweat freely. I saw him three times that day and then he was so much better he said I need not come next morning. April 13, a month later, I was again called and found an abscess under or over the liver, it was hard to tell which was the original seat of the trouble. Patient was in great pain, fever very high, sweating septic; consultant declined to operate as the case seemed hopeless. In a few days when in pain patient began to cough up a great quantity of pus of putrid odor so strong that others could not stay in the room. After that the patient began to improve and was able to come to my office May 25. In June and July he was pretty well, but August 24 the abscess under liver reappeared and patient went to hospital for operation by Dr. Noble whose reports are as follows:

Patient was seen August 23, 1910, and sent to St. Joseph's Hospital, where, Aug. 25, 1910, he was laparotomized. An incision one inch to the right of the median line, one inch below the right costal border was made, through which access was had to a cavity, which on the median side was walled off from the general peritoneal cavity by adherent intestine. The cavity in which we entered, was found to extend up under the liver to the diaphragm and contained pus and necrotic material. Its protection wall to the median side was not disturbed. Three drains were inserted and the abdominal wall closed with exception of the drain exits. The wound drained freely for about six days, at the end of which time all drains had been removed. At the end of two weeks the patient left the hospital, the central drain exit still discharging slightly.

September 29, or about four weeks following the first operation the wound was entirely healed. Between that time and Oct. 14, 1910, the patient came to the office at irregular intervals, reporting himself in good condition. October 14, he came in complaining of some pain in the right abdominal region. October 19,

there was a pronounced bulging in the lower half of the wound area and he was sent to St. Joseph's Hospital, where, October 20, he submitted to a second laparotomy. Upon opening the abdomen through the site of the original incision, we came upon necrotic intestine involving the head of the cecum and about four feet of the ileum. Owing to the extensive necrosis, the extensive adhesions, and the serious condition of the patient under anesthesia, it was decided best not to attempt an intestinal anastomosis at this time. So the cecum was attached to the upper angle of the wound and the ileum in the lower angle of the wound, leaving a fistula at this point. Eleven days following this operation, October 31, a third laparotomy was undertaken to close the fecal fistula. An incision was made one inch to the median side of the original incision, through which the free end of the resected cecum and the free end of the resected ileum were dissected out from a mass of adhesions and brought into the opening and united by means of a Murphy button, and the incision was closed in layers. Drainage was inserted through the original incision. Four weeks following this operation the Murphy button was removed by means of a forcep from the rectum. Eight weeks following this last operation both wounds were entirely healed and the patient left the hospital. At this date, Feb. 2, 1911, the patient has regained his normal weight, 180 lbs., and he says he is perfectly well. All the functions are normal and he has returned to work.

Dr. E. Mammen reported a case of operation for tic douloureux or trigeminal neuralgia in a patient, a lady aged 58 years, who was an intense sufferer for a year and a half, and who is completely relieved by the operation. This procedure is applicable only to cases where the middle or infraorbital branch alone is involved. The incision is made above the zygomatic arch from the outer angle of the eyebrow downward and backward, then at an obtuse angle upward and backward. It is carried through the skin and fascia, the muscular fascia being divided about one-half inch above the zygoma. This bony arch is then cut through posteriorly near its temporal terminus, and anteriorly near its junction with the superior maxillary bone. The temporal muscle is then pushed aside and the dissection continued inward until the base of the pterygoid process is reached, where the foramen rotundum permits exit of the middle branch of this nerve. This is then hooked up, seized with forceps and twisted out. He reported another case like this one done over two years ago in which relief continues to be complete. This operation is much less severe than that of removal of the Gasserian ganglion. The latter should be resorted to only when all three branches of the nerve are involved.

Dr. Young reports a case of tic improved by thermal electric treatment. Dr. Fulwiler reports improvement of case by continued use of coniin.

Dr. Sloan reported a routine examination of all laparotomies for gall-stones.

Dr. Mammen says they are found in 25 per cent. of all post-mortems. Most of these had had no symptoms of their presence.

MORGAN COUNTY

The regular meeting was held March 9, at the Public Library building at 8 p. m., with Dr. H. C. Woltman presiding. The following members were present: Drs. Black, Adams, Bowe, Treadway, Cole, Campbell, Baxter, Ogram, Reid, Metcalf, Hairgrove, Norris, Gailey, Hinton, Woltman, Leonard, Stacy, Hardesty and Gregory. Resolutions endorsing the request of the trustees of the University of Illinois in asking the legislature for a sum of $100,000 per year for the equipment, maintenance and extension of its Medical School, were adopted unanimously and the president appointed Drs. Bowe, Adams, Stacy, Ogram and Leonard a committee of five to present the sentiments of the society to the legislature.

Resolutions recently adopted by the Williams County Medical Society were read and on motion of Dr. Black, they were referred to the legislative committee with power to act. Dr. Black moved that a committee of three be appointed to secure for the society, without incurring any expense upon the Society's treasury,

an expert sanitary inspection of the water condition north of the city. On second of Dr. Cole, the motion carried unanimously and the president appointed Drs. Black, Pitner and Hairgrove to secure such an inspection.

Dr. Adams spoke briefly on the Optometry Bill now pending before the legislature and moved the adoption of the following resolution:

"Believing that the passing of the proposed Optometry Bill now before the legislature of Illinois would result in ultimate injury to the health of the citizens of the State and would lower the standards of medical practice; therefore be it

Resolved, That we, the members of the Morgan County Medical Society, protest the passage of the Optometry Bill, viz., Senate Bill No. 140, and recommend that copies of this resolution be sent to the Senator and Representatives of this District."

On second by Dr. Bowe, the resolution was adopted unanimously.

The paper of the evening was read by Dr. Walter L. Treadway, the subject being "The Mixed Phase of Manic Depressive Insanity With Studies in Four Cases." Discussion opened by Drs. Hinton and Bowe. Adjourned.

A. R. GREGORY, Secretary.

ROCK ISLAND COUNTY.

The regular meeting of the Rock Island County Medical Society was held at the New Harper Hotel, Rock Island, Tuesday evening, Dec. 13, 1910. After dinner the business session was held. Dr. Eddy presided in the absence of president Bennett. The minutes of the October meeting were read and approved. The bill of the Manufacturers' Hotel for $31 was allowed and ordered paid. The application for membership of Dr. J. P. McManus, Rock Island, was read and laid over until the next meeting. Drs. Lachner, Dart and Seids were appointed as a committee on Dr. McManus' application. The secretary read a statement from the State Board of Health regarding the Supreme court's decision on the Itinerant Venders Act, declaring it in part valid and constitutional.

Dr. Geo. E. Decker of Davenport, Iowa, member of the Iowa State Board of Health then read a paper on "Anterior Poliomyelitis." The paper was very timely and instructive because of the national as well as local prevalence of this disease. The new facts regarding its epidemiology were well brought out. The paper was discussed by Drs. C. O. Bernhardi, Dart, Sala, Lamping, Craig, Sr., and Mueller. Dr. Craig, Sr., made a motion that a vote of thanks be given Dr. Decker and that the secretary endeavor to have the paper publishd in the *Journal of the American Medical Association*. Carried. The meeting then adjourned. Present: Drs. Ludewig, C. O. Bernhardi, Eyster, Hollowbush, Dart, Craig, Sr., Craig, Jr., Norman, Wright, McManus, First, Sala, Souders, Dailey, Chapman, Foster Lamping, Eddy, Ostrom, Williams, Seids and Mueller. Guests: Drs. Geo. E. and H. M. Decker of Davenport, Ia. ALBERT N. MUELLER, M.D., Sec.

SANGAMON COUNTY.

The Sangamon County Medical Society held its regular monthly meeting at Lincoln Library, March 13, 1911, President C. F. Stericker presiding at the meeting. The minutes of the previous meeting were read and approved.

Revision of fee-bill came up for discussion. No member of this committee being present, Dr. G. N. Kreider moved that the committee be given more time to prepare report. Carried. Dr. Wm. H. Holmes, on motion of Dr. T. H. D. Griffitts, was given a transfer card to Kankakee County Medical Society. The Williamson County Medical Society's letter of March 2 was read, asking this society to adopt the same or similar resolutions to those adopted by that society, relative to bills now pending in the State Legislature, pertaining to the practice of medicine. Dr. G. N. Kreider at the special meeting of March 7, 1911, was requested by the society to draft resolutions covering the proposed legislation; and these were

read by Dr. Kreider. Dr. T. H. D. Griffitts moved that Dr. Kreider's resolutions be printed and sent to each member of the society. Carried. The resolutions drafted by the trustees of the University of Illinois and sent this society for their consideration, were read. Dr. H. T. Morrison, Jr., moved same be adopted by this society. Carried. Bills to the amount of $34.85 were read. Dr. Kreider moved that bills be allowed. Carried.

ST. CLAIR COUNTY.

The St. Clair County Medical Society held a regular quarterly meeting at the Belleville City Hall on the afternoon of Jan. 5, 1911. The report of the treasurer was approved. Officers were elected as follows: President, Charles S. Skaggs, East St. Louis; vice-president, G. C. Otrich, Belleville; secretary, Carl A. W. Zimmermann, East St. Louis; treasurer, H. A. Hansing, Belleville. On the board of censors were appointed Drs. W. E. Wiatt, J. Rendelman and Gunn, Sr. On the programme committee were appointed, Drs. G. C. Otrich, E. P. Raab and J. Twitchel.

Dr. F. L. Evans read a paper entitled: "A Report of Two Cases of Cancer Treated with the Vaughn Cancer Residue." The paper was thoroughly scientific and was discussed by Drs. Fairbrother, Wiggins, Lillie, Miller and Zimmermann. Dr. G. C. Otrich read a paper on "The Value of the Laboratory as an Aid to Physical Diagnosis," which was warmly discussed by Drs. Wiggins, Fairbrother, Lillie and Miller. Dr. Wiggins then moved that a special meeting of the Society be called for the latter part of February at the Elks' Club at East St. Louis, in order to make the acquaintance of the State President; and that Dr. Cotton be asked to read a paper on a subject of his own choosing. The motion carried unanimously. Dr. Hilgard read a letter from the St. Louis City Hospital Alumni Association, in which the wish was expressed to have a joint meeting of the two societies at some future date. The secretary was instructed to correspond with the secretary of the St. Louis society, relative to arranging a suitable date. Members present: Drs. Miller, Otrich, Wiggins, Duey, Skaggs, Cables, Gunn, W. E. Wiatt, W. S. Wiatt, Hansing, Lillie, Fairbrother, Evans, Lippert, Hilgard, Wangelin, Starkle, Caldwell, Rayhill, Huggins, Dew, Rendelman, Raab.

After the meeting all members adjourned to a near-by café and had supper.

Special Meeting, Feb. 23, 1911

On Thursday, Feb. 23, 1911, the St. Clair County Medical Society held a special meeting in East St. Louis at the Elks' club rooms, with Dr. A. C. Cotton, president of the Illinois State Medical Society, as guest of honor. The meeting was called to order by Dr. Skaggs at 4 p. m. Dr. Cotton having been introduced, read a voluminous paper on "Acute Poliomyelitis." The paper considered the more extensive epidemics of acute poliomyelitis which occurred in the past four years; it also took into account the experimental pathology which has been carried on both here and abroad.

Dr. H. A. Cables opened the discussion and showed a great familiarity with the modern literature on the subject. Drs. Wiggins, Lillie, Fairbrother and Zimmermann also discussed the paper which was thoroughly appreciated by all present. After the scientific program, a sumptuous supper was partaken of in the Elks' dining room. This over, Dr. Cotton was given an opportunity to be greeted by the members individually, and in due time was escorted to his train. Nor should it be forgotten that a rising vote of thanks was tendered the essayist after he had closed his paper. Those present were: Drs. Otrich, Hilgard, Skaggs, Culbertson, Bottom, Butler, Eisele, McQuillan, Cannady, Ressel, Wiggins, Fulgham, Campbell, Lillie, Harney, Lippert, Smith, Cables, Hill, Stewart, Fairbrother, Caldwell, Spannagel, Adams, W. S. Wiatt, C. F. Wilhelmj, LeGrande, R. A. Twitchel, Rendelman, U. S. Short, Evans, L. B. Short, Enewitz, Mesirow, Lane, Zimmermann.

CARL A. W. ZIMMERMANN, Sec'y.

STEPHENSON COUNTY

The annual meeting of the Stephenson County Medical Society was held at the Court House in Freeport, Tuesday, Jan. 26, 1911, President A. E. Smith presiding. Minutes of the previous meeting were approved as read. The following answered to roll call. Drs. Hewetson, Karcher, Mease, Phillips, Stealy, Thompson, Smith, Hayes, Rosensteil, and Clark. The report of the treasurer showed our membership all in good standing and a very neat sum in the treasury. The election of officers for the ensuing year resulted as follows: President, Dr. D. C. L. Mease; vice-president, Dr. J. H. Stealy; treasurer, Dr. N. C. Phillips; secretary, Dr. J. S. Clark; censor, Dr. Sarah E. Hewetson; delegate to state meeting, Dr. D. C. L. Mease; alternate to state meeting, Dr. W. L. Karcher.

The name of Dr. C. F. M. Butterfield of Rock City being favorably reported on by the board of censors, he was elected to membership in the society. Dr. J. H. Stealy brought up the subject of trained nurses for St. Francis Hospital. The hospital is a modern institution in all respects excepting for the lack of a proper system of nursing and dietetics. It was moved and seconded that the chair appoint a committee of three to draw up a petition and circulate it among the physicians of the city for their signature, requesting that the management of the hospital inaugurate an up-to-date system of dietetics and nursing in keeping with that of the best hospitals in the country. The committee appointed was: Drs. Stealy, Smith and Leavy.

Dr. N. C. Phillips read a paper on "Drug House Therapy." The doctor's remarks seemed to be quite apropos. J. SHELDON CLARK, Secretary.

WHITE COUNTY

The White County Medical Association met in Carmi at the offices of Drs. Lehman and Niess, Feb. 28, 1911. In the absence of President C. B. Staley, Vice-President J. L. Lehman presided. On roll call the following members were present: Drs. Lehman, Niess, Sibley, Johnson, Ellis, Boyer, Leslie, Keagy. No program having been prepared, the following business was transacted. Report of committee on fee-bills was read by the secretary. After discussion, a motion was made by Dr. Sibley, that if the majority of doctors of White County sign fee-bill it should become effective. Carried. The election of officers for 1911 resulted as follows: president, Dr. C. S. Keagy of Grayville; vice-president, J. A. Boyer, Carmi; secretary and treasurer, Dr. J. Niess, Carmi; delegate to Illinois state medical meeting May 17, 18, 19, Dr. F. Sibley; alternate, Dr. F. Leslie. Program committee appointed by chairman: Drs. Sibley, Boyer, Ellis. Motion made by Dr. Sibley to adopt resolutions in remembrance of the deceased brother, Doctor Waddle, and that a copy be sent to the home and one copy be spread on the records of White County Medical Association. Committee appointed: Drs. Boyer, Johnson and Sibley. Adjourned. J. NIESS, Secretary.

NEWS OF THE STATE

PERSONAL

Dr. A. J. Foster has removed from Peoria to Segure, La.

Dr. G. D. Lockie of Pontiac has moved to Springfield, Ill.

Dr. Dallas B. Phemister, Chicago, has returned from Europe.

Dr. J. N. Shearl has removed from Urbana to Middletown, Ill.

Dr. Henry Hart has removed from Quincy, Ill., to Medford, Ore.

Dr. F. E. Tulley is the newly elected president of the Granite City Commercial Club.

Dr. E. G. Merwin of Highland was appointed county physician of Helvetia township.

Dr. A. B. Middleton, who has spent the winter in Florida, has resumed his practice at Pontiac.

Dr. J. R. Farthing of Marine was appointed medical director of the Midland Casualty Company, of Chicago.

Dr. Katherine B. Rich has been appointed assistant city physician of Chicago and began her duties February 24.

There is a good opening for an active, up-to-date physician in Maryville, Mitchell and Grantfork, Madison County.

Dr. F. E. Glauner of Decatur has removed to Marine, where he will practice in connection with Dr. J. R. Farthing.

Dr. J. M. Threadgill of New Douglas was thrown from his horse Jannary 30 and sustained a fracture of his arm.

Dr. Guy G. Dowdall, Chicago, has been appointed chief surgeon of the Illinois Central System, vice Dr. John E. Owens.

Dr. William A. Peterson has removed from Thirty-First Street and Wentworth Avenue, Chicago, to 5039 Winthrop Avenue.

Dr. B. Brindley Eads, who was operated on at Presbyterian Hospital, Chicago, March 6, is making satisfactory progress toward recovery.

Dr. Rose A. Russell, former superintendent of the Granite City Hospital, has accepted a position in the state hospital in Cherokee, Iowa.

Fire at Abington, March 11, destroyed the office equipments of Drs. Charles F. and Edward H. Bradway, the loss being estimated at $1,000.

Dr. Lucinda H. Carr, Carlinville, was awarded $1,000 in her suit for damages against the Chicago and Alton Railway for injuries received in a wreck.

A jury in the municipal court, Chicago, on March 14, is said to have returned a verdict assessing a fine of $200 against Mrs. M. Selike, a Milwaukee Avenue healer.

Dr. Paschall N. Bowman, Springfield, charged with manslaughter, is said to have been freed from the charge February 27, and committed to the Jacksonville State Hospital.

Dr. Barret B. Griffiths, Springfield, who has been in Colorado Springs for several months on account of ill health, reports that he is slowly recovering from an injury to his foot.

Dr. William H. Holmes, Springfield, state bacteriologist, has resigned to enter the service of the State Board of Administration as assistant physician at the Kankakee State Hospital.

Dr. S. Dahl, Chicago, while attempting to get into a moving elevator at the Norwegian Lutheran Deaconesses Home and Hospital March 14, fell and sustained a compound fracture of the right leg.

Dr. Reinhard Rembe, formerly of Bloomington and of recent years specialist in Chicago, has received the appointment of professor of diseases of the eye, ear, nose and throat in the hospital and college at Manila, Philippine Islands. Dr. Rembe has sent farewell announcements to his friends in Chicago and will shortly sail to take up his duties in Manila.

NEWS

—In the state tax levy for 1911 is included an item of $442,184.64 for the Municipal Tuberculosis Sanatorium.

—The President has sent to the senate the nomination of sixty-seven more physicians of Chicago as first lieutenants of the Medical Reserve Corps.

—Dr. Benjamin Gleason, wife and children of Danville, Ill., sailed March 31, 1911, for several months' stay in Europe, visiting clinics in Berlin, Vienna and London.

—The Sisters of Mercy, Aurora, announce that they have purchased the Ryburn Flats, with the surrounding property, for $18,000 and will establish a maternity hospital to be known as St. Joseph's Infirmary.

—The John Warner Hospital, Clinton, is open for the reception of medical and clinical cases. Patients entering the hospital will be under the control of their own physicians as the hospital has no attending staff.

—Fifteen of the eighteen members of the medical staff of Oak Park hospital resigned March 3, the cause assigned being the interference with the duties of the staff by the Sisters of Misericordia, who are in charge of the hospital.

—As a result, it is said, of disloyalty and insubordination on the part of members of the staff of Mary Thompson Hospital seven members have been dismissed. The physicians in question claim that the trouble lies in the appointment of a lay superintendent, and the overbearing treatment of the physicians by the superintendent.

—The Council of the Chicago Medical Society at a meeting, February 14, unanimously adopted resolutions endorsing the request of the trustees of the University of Illinois for an annual appropriation of $100,000 for the equipment, maintenance and extension of the medical school, and appointed a committee to assist in presenting the matter to the legislature and the governor.

—The third meeting of the Society of Medical History of Chicago was held February 24, when Dr. O. B. Will, Peoria, the guest of honor, delivered an address on "A Chapter on the Pioneer Period of Medicine in Illinois," which appears on page 399. Preceding the meeting there was an informal exhibition of autographic material, participated in by many members of the society.

—The common council have decided to add the fund of $75,000 bequeathed to the city by the late Mrs. Anna C. Durand for the establishment of a public bath house to another fund, the combined fund amounting to about $200,000, to be used for the construction of a hospital for the treatment of contagious diseases, and an arrangement has been made with the trustees of the McCormick Memorial Institute for Infectious Diseases whereby that institution will meet any expense of maintenance not covered by the Durand endowment fund.

—Senate Bill 235, introduced February 23 at the instance of the State Board of Health, provides that when a medical college has a five years' course, the fifth year clinical, its students may be admitted to examination at the end of the fourth year and if they pass may receive a limited license good for eighteen months entitling them to practice in a hospital. On graduation the student will receive a permanent license without further examination. The bill also aims to give the State Board of Health jurisdiction in the matter of revocation of certificates over all issued since 1877.

MEDICAL SOCIETY NOTES

—The Williamson County Medical Society, at a special meeting held for the purpose, February 28, passed resolutions commending the American Medical Association for its services in elevating American medical standards of preliminary education and of medical practice. The preambles recite that there are many unnecessary medical colleges which are run for commercial purposes, and that because of competition between these colleges many incompetent and even illiterate physicians are graduated; and that these factors together with commercialism in professorships and lack of stringency in examinations are causing harm to the general practitioner, without any benefit to the public.

—The following resolutions were submitted by Dr. Henry F. Lewis at the meeting of the Council of the Chicago Medical Society held Februay 14 and were favorably acted on:

WHEREAS, Certain members of the Chicago Medical Society have appeared in the public press in a manner suggestive of flagrant advertising; and

WHEREAS, Press publicity, which even the casual reader must construe as advertising, is a serious breach of professional ethics as prescribed by the American Medical Association; and

WHEREAS, The recipients of such publicity have disclaimed, and with apparent truth, responsibility for the same; be it

Resolved, That, in the opinion of the Council of the Chicago Medical Society, it is the duty of the recipients of such publicity as may be construed as adver-

tising pure and simple, to take steps to protect themselves and the profession from such compromising newspaper mention; and be it further

Resolved, That the gentlemen, whose cases have just been considered by this Council, should advise the press of this city of the injury to the profession and to themselves resulting from the publication of methods of operation and real or supposed medical or surgical discoveries, and request the press not to use without authority their names in connection with such matters; and be it further

Resolved, That, in the opinion of this Council, reporters should be excluded from all meetings of medical societies during the consideration of all strictly scientific matters, except those bearing on sanitation, public policy, hygiene or sociology, and that steps should be immediately taken to enforce this rule; and be it further

Resolved, That an abstract of all papers read before this Society, which shall come within the range of subjects considered by this society as proper for publication in the public press, be placed in the hands of the secretary before or at the meeting at which they are read, to be given by him to the press, providing that this shall in no way abrogate the right of the authors to themselves assume the responsibility of placing such matters in the hands of the press; and be it further

Resolved, That a copy of this preamble and resolutions be published in *The Bulletin* and given for publication in the journals of the Illinois State Medical Society and the American Medical Association.

NEW INCORPORATION

—Golden Cross Medical Dispensary, Chicago; furnish free medical, surgical and dental services; incorporators, William Blanchard, Anton Samuel and Joseph Subaitis.

MARRIAGES

HENRY FRANCIS BALLARD, M.D., to Miss Louise Myers, both of Chenoa, Ill., February 22.

GEORGIANA MARGARET DVORAK, M.D., and John Joseph Theobald, both of Chicago, Oct. 29, 1910.

HARRY WILLIAM ACKERMANN, M.D., Rockford, Ill., to Miss Maud Goodspeed of Elgin, Ill., February 21.

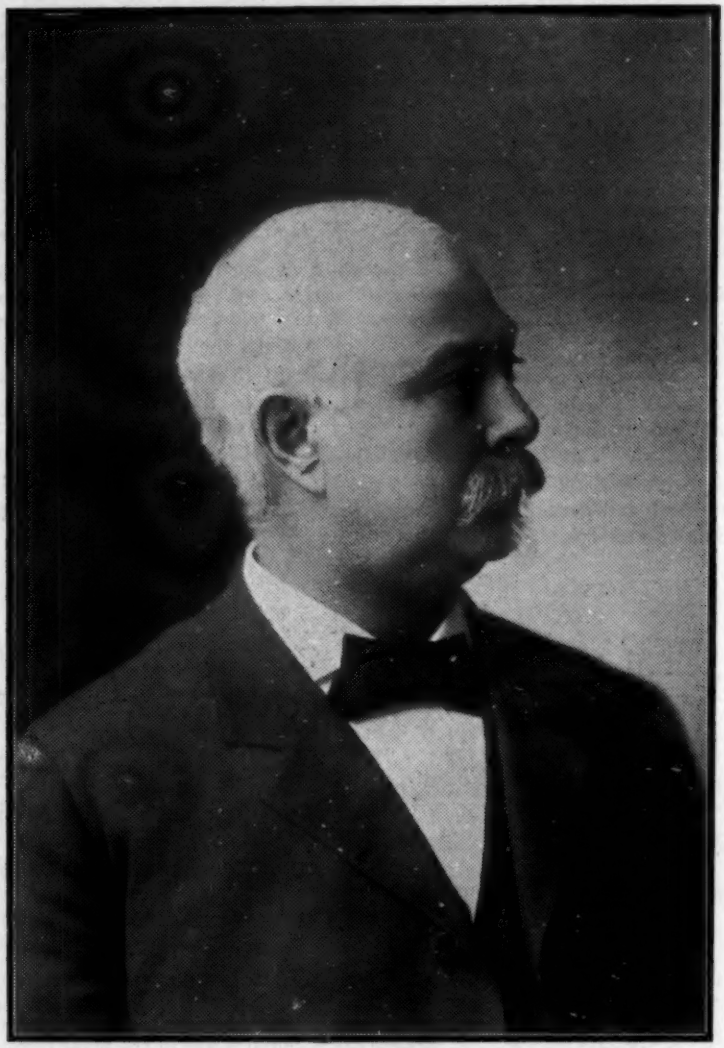
HARRY WILLIAM ACKERMANN, M.D., Rockford, Ill., to Miss Maud Goodspeed of Elgin, Ill., February 21.

JOHN STEPHEN NAGEL, M.D., Chicago, to Miss Evelyn Morrison Robinson of New York City, March 7.

OBITUARY

DR. G. G. CRAIG of Rock Island died March 12, 1911, of pneumonia, after a five days' illness. Dr. Craig's death removes one of the older members of the Illinois State Medical Society, and a veteran of the Civil War. He was born in Westmoreland County, Pa., Oct. 26, 1843, and enlisted for the war when only 17 years of age. He was wounded in battle twice in1865; graduated from Jefferson Medical College in 1869; and located in Rock Island the same year. He was appointed surgeon of the Rock

Island Post in 1889, and retained this position until the time of his death notwithstanding the reorganization of the army medical department in 1908. Soon after his location in Rock Island Dr. Craig secured a large



G. G. CRAIG, M.D.

practice and in 1881 was appointed Commissioner of Health. He at once began active work, and was the pioneer commissioner of civic cleanliness in the smaller cities of Illinois. Compulsory vaccination, a complete garbage system and sewage system were inaugurated by Dr. Craig's activ-

ity. He was also active in cleaning up the disgracefully dirty slaughterhouses which were in use. The funeral services were held March 15, and the sermon by Rev. George B. Smith of St. Paul, Minn., was a touching tribute to Dr. Craig, the medical profession, and the old soldier. Pastor Smith had served in the war with Dr. Craig. The city council, the Broadway brotherhood, and other organizations have paid deserving tributes to his memory. Drs. Craig, Carter and Bernhardi founded in 1896 a sanitarium in Rock Island, which continued for ten years. He had been president of the Rock Island County Medical Society and the Illinois and Iowa Central District Medical Association. Dr. G. G. Craig, Jr., and Miss Nellie are left to mourn his loss.

DEATHS

THOMAS L. FOULDS, M.D., a resident of Alton, Ill., for twenty-eight years; died at his home in Alton, March 7, 1911, aged 57.

JOEL ALLEN, M.D., one of Livingston County's oldest physicians, died at his home in Pontiac, March 11, aged 82.

CONSTANTINE H. MURPHY, M.D., Washington University, St. Louis, 1854; died at his home in Chesterfield, Ill., Feb. 13, 1911, from heart disease, aged 83.

JOHN BIGGS STANDLEE, M.D., American Medical College, Eclectic, St. Louis, 1904; died at his home in Peoria, Ill., February 17, from tuberculosis, aged 33.

MARIA STEWART LOUGHBOROGH EDWARDS, M.D., American Medical Missionary College, Chicago, 1899; formerly of Moline, Ill., died in St. Helena, Cal., February 28.

HENRY J. WEYL, M.D., Eclectic Medical Institute, Cincinnati, 1875; a veteran of the Civil War; died at his home in Decatur, Ill., February 23, from prostatic hemorrhage, aged 75.

WILLIAM B. HART, M.D., University of Buffalo, N. Y., about 1846; for nearly sixty years a practitioner of McHenry County, Ill.; died at his home in Greenwood, February 19, aged 99.

FRANK J. MASCHEK, M.D., Rush Medical College, 1882; formerly a member of the American Medical Association; died at his home in Chicago, February 10, from cancer of the tongue, aged 50.

CHARLES AUSTIN JENNINGS, M.D., Starling Medical College, Columbus, Ohio, 1889; formerly of Delavan, Ill; died at the home of his aunt near Olathe, Kansas, Feb. 21, 1911, from tuberculosis, aged 43.

THEODORE BACMEISTER, M.D., Homeopathic Medical College of Pennsylvania, Philadelphia, 1856; a pioneer practitioner of Central Illinois; professor of materia medica and therapeutics in Hahnemann Medical College, Chicago, 1869 and 1870; died suddenly at his home in Toulon, Ill., March 8, from angina pectoris, aged 63.

DR. COLUMBUS V. MASSEY, 545 Belmont Avenue, Chicago, died Tuesday, March 21, 1911, aged 62 years. Dr. Massey practiced for many years at Athens, Menard County, and went to Chicago about 1890. He

was a man of a great deal of common sense and was highly esteemed both in his country practice and later in the metropolis.

Dr. W. B. Outten of St. Louis died March 18, 1911, after a short illness, aged 66 years. Dr. Outten was well known in Illinois, being for several years chief surgeon of the Wabash Railway. In 1885 he established the Wabash Hospital at Springfield, and his duties brought him in contact with many medical men connected with the Wabash System.

Dr. William K. Mathus died at his home in Williamsville, March 22, 1911, of apoplexy, aged 86. Dr. Mathus was born near Allentown, Lehigh County, Pa., April 17, 1824. He received his early education in the schools of Pennsylvania, later studying medicine in St. Louis, then practicing in Springfield, Ill. In 1856 he located in Williamsville, where he practiced his profession for many years.

W. P. Peirce, M.D., of Hoopeston, died March, 1911. Dr. Peirce had resided in a number of cities in Illinois and in each had made himself a power both medically and politically. He was born in Chautauqua County, New York, March 25, 1830, and had a good preliminary education. He graduated in medicine from the University of the City of New York in 1852. Very soon after he came to Illinois and practiced in Kendall County until 1861, when he raised a company of volunteers and was elected captain; later he was appointed major and surgeon of the Eighty-Eighth Illinois, serving to the close of the rebellion. After the war he located at Lemont, Cook County, until 1880 when he took up his residence in Hoopeston where he has since resided. Dr. Peirce was sent to the general assembly from Kendall County, sat in the constitutional convention of 1870 and was senator from Kendall, Grundy and Will Counties in 1871. He served as mayor of Hoopeston. Dr. Peirce had a long and eventful career and marked influence in the history of Illinois.

J. B. Walker, M.D., of Effingham, died Feb. 11, 1911, from apoplexy. The doctor had been ill for a little over a year, but had attended to his professional duties until the day before his death. He was born in Porterville, Pa., in 1856, graduated at Miami Medical College of Cincinnati in 1882, and immediately located in Effingham where he has since practiced. He was a member of the Presbyterian Church and of the various orders of Masonry, and a prominent citizen of his community. His wife, to whom he was married in 1883, and one daughter survive. The funeral, which was held on the 14th inst., was largely attended. The sermon was preached by Rev. S. M. Morton, formerly pastor of the Presbyterian Church. The Effingham County physicians attended in a body, and sixteen members of the profession from outside points were also present to testify their regard for the character of Dr. Walker. Dr. Walker was at one time mayor of Effingham; local surgeon of five railways; president of the board of education; a member of the Effingham County Medical Society; Æsculapian Society of the Wabash Valley and the Illinois State Medical Society, and a constant supporter of the best in the medical profession.